OCCUPATION ILLNESS AND INJURY DATA IN AGRICULTURE: SECOND ANNUAL REPORT

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Utah Biomedical Test Lab.
Salt Lake City

Prepared for

National Inst. for Occupational Safety and Health, Cincinnati, OH

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Workers compensation case records from 17 states and Puerto Rico and the Farm Accident Survey for 21 states were reviewed to assess safety and health problems in agriculture. The records were analyzed to identify predominant causes of injury and illness on a year basis. Data limitations of the workmen's compensation files included: incomplete geographical coverage, lack of case record detail, coding incompatibility, underreportin and reporting errors. The most common cause of accidents was working surfaces, followed by vehicles, tools, and animals. The National Data Collection System was developed to provide an effective and efficient link between collected data and users' needs.

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ABSTRACT

This report presents statistical information about illness and injury cases related to agricultural occupations. Collection of the case data is described. Tabular listings and narrative summaries of analysis results are given for data from worker's compensation sources. The computer system for storing the case records and for performing statistical analysis is explained. An evaluation of the collection, analysis, and computer processing elements of the agricultural case data system is included. Development of new data sources is discussed.

The report was prepared as part of a continuing effort to define illness and injury problems in agriculture.

INTRODUCTION

Information about the occurrence of occupationally related illness and injury can have two uses:

1. provide a basis for selection of research projects needed to aid in reducing hazards and exposures in the work place, and
2. provide data for the design of more detailed studies focused on particular illnesses or injuries.

Under contract to the National Institute for Occupational Safety and Health (NIOSH), the Utah Biomedical Test Laboratory (UBTL) has been conducting research in the field of agricultural occupational safety and health. The group of projects pursued under the contract is known as the ARAL Program.

One of the projects is called the National Data Collection System, and this project is the subject of this annual report.

This report describes the collection of illness and injury case records in agriculture, and presents statistical analysis of those records. Additional chapters deal with the computer system development in connection with the data base, and with an evaluation of the current status of the National Data Collection System.

DATA COLLECTION

Records of injury and illness occurrences are being collected to permit an assessment of safety and health problems in agriculture. Emphasis has been placed on using existing systems that report such occurrences. Data requested from these existing systems are records of individual cases rather than summary reports. The case data, in punched card or magnetic-tape form, is used as the basis for statistical analysis by computer. Collection activity in connection with the two principal existing sources of agricultural case data is described below.

Worker's Compensation Case Data

Worker's compensation (WC) case data is currently received from eight agencies, as shown in Table 1. States represented by these agencies include about 25% of the hired farm workers in the U. S. and Puerto Rico. California, alone, accounts for 18%. A total of 129,000 records are in the data base. The number of records and period covered for data received from each agency are described in the analysis chapters of this report.

According to the White Paper on Worker's Compensation[1], a total of 15 states were scheduled to cover their agricultural workers with WC insurance in the same manner as workers in other industries, beginning July 1975. All states identified in Table 1 are in this category with the exception of New York and Tennessee. Those listed states not already contributing to the data base were requested to provide case data records. The requests were based on the assumption that improved coverage of farm workers would result in additional case records of injuries and disease. Responses to the requests are summarized in the Comments column. If all states in Table 1 were included in the data base, 38% of the hired farm workforce would be represented. Perhaps more important than the increased number of case records would be the improved geographical coverage provided by the additional states. Broader geographical coverage gives more inclusive information on differing kinds of agriculture.

Farm Accident Survey

An important additional source of accident data is the Farm Accident Survey, conducted by the National Safety Council. The survey has been developed over a period of several years and is aimed at providing statistics and causative information about farming accidents throughout the United States. By the end of 1975, a total of 21 states were to have conducted sampled surveys. Table 2 lists those states and presents the survey schedule through 1980. Notice that the entire U. S. is to be included in the survey by 1979.

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Table 1. Worker's Compensation Case Data. Collection Status

State	Agency	Number of Case Records Received	Period Covered	Frequency	Number of Hired Farmworkers	Comments
Alaska	-	None.	See Comments.	NA	200	In 1974, there were 6 farm accidents. Accident data are hot now codified by type or group.
Arizona	-	None.		NA	26,000	Occupation, disease, and nature are not coded.
California	Department of Health	19,420	1/70-9/75	Quarterly	231,000	
California	Department of Industrial Relations	90,024	1/70-9/74	Quarterly		
Connecticut	-	None.		NA	6,600	Doctor's First Report of Injury is sent to private insurance carriers. Summary statistics provided by those carriers to Workmen's Compensation Commission do not include occupation or industry detail.
Hawaii	-	None.		NA	9,360	Coded data may be available in FY 1977, pending development of computer systems.
Massachusetts	-	None.		NA	7,200	Inquiries directed to Department of Labor and Industry have not been answered.
Michigan	-	None.		NA	24,000	Ag data could be selected by special program at a one-time cost of $1.5-2.5K.
Montana	Division of Workmen's Compensation	None.		NA	13,000	It appears that accident case records can be made available. A magnetic tape data specification has been supplied to agency.
New Hampshire	Department of Labor	None.		NA	1,400	A copy of 1975 ag data has been promised, pending completion of computer programming.

Table 1(Continued). Worker's Compensation Case Data - Collection Status

State	Agency	Number of Case Records Received	Period Covered	Frequency	Number of Hired Farmworkers	Comments
New Jersey	Department of Labor and Industry	484	1/73-12/74	Annual	9,000	
New York	Workmen's Compensation Board	2,514	1/72-12/73	Annual	31,000	
Ohio	Industrial Commission	1,409	1/73-12/74	Annual	19,000	
Oregon		None		NA	20,000	What data are collected and what could be made available is unclear. Further inquiry is planned.
Pennsylvania		None		NA	22,000	It appears that ag data are not available.
Puerto Rico		14,804	1/70-12/74	Not yet established	53,000	
Tennessee	Department of Public Health and Department of Labor	260	1/70-12/74	Annual	27,000	Occupation is not part of the data contained in records of notifiable disease cases. Hand selected case records have been provided on the basis of possible relationship to agriculture. Fatal accidents are classified by occupation and those records for agriculture cases have been provided.
Vermont	Department of Labor and Industry	557	7/74-9/75	Quarterly	2,900	
Washington	Department of Labor and Industries	None.		NA	33,000	Duplicates of lost time case records are expected to become available pending data processing.

Table 2. National Safety Council Farm Accident Survey Schedule*

Region	Pre-1975 Completed Surveys	1975	1976	1977	1978	1979	1980
1.	New York	New York	Massachusetts	Vermont New Hampshire	Connecticut Rhode Island	Maine	New York
2.	West Virginia	Maryland	Pennsylvania	Virginia Florida	West Virginia	New Jersey Delaware	Maryland
3.	Alabama	Georgia		South Carolina	North Carolina	Alabama	Georgia
4.	Indiana Michigan Ohio	Tennessee	Indiana	Ohio	Michigan	Kentucky	Tennessee
5.	Illinois Minnesota Missouri Wisconsin	Iowa	Wisconsin	Illinois	Minnesota	Missouri	Iowa
6.	Nebraska	Kansas	South Dakota	Nebraska	Colorado	North Dakota	Kansas
7.	Louisiana		Oklahoma	Arkansas	Texas	Mississippi	Louisiana
8.	Oregon	Idaho	Washington	Montana	Oregon	Wyoming	Idaho
9.	California	Utah	Arizona	New Mexico	Nevada	California	Utah

*Source: National Safety Council
Farm Department
11/75

In the survey, a rather elaborate set of multilevel questionnaires is used to collect accident data suitable for an understanding of farm safety problems. Each participating farm family is interviewed four times during the survey year. The survey includes approximately 3% of the farms in each state. The information on the questionnaires is keypunched and forwarded to the Council. There, the cards are used to enter the information into a computer data base. Special proprietary programs allow interactive data analysis. Selected multilevel cross tabulations permit the development of statistical relationships between reported induries and surrounding hazardous circumstances. Based on the survey sample size, statistical projections of injury frequencies and rates are made for each state and for the nation.

In the spirit of developing a data base that includes all available farm injury and illness case records, the 21 states surveyed so far have been requested to provide duplicate punched card sets. Cards have been received from:

California
Illinois
Louisiana
Minnesota
Ohio
Oregon

Because of resource limitations, no analysis of this data has yet been performed.

Additional discussion of the WC and Farm Accident Survey data may be found in the System Evaluation portion of this report.

DATA ANALYSIS

Description

The purpose of this analysis is to present reported data in such a manner as to identify predominant causes of injury and illness on a yearly basis. Each analysis was directed toward the reporting system of each data source, but attempts were made to summarize data as consistently as possible across data sources by manipulating coding categories to make them more uniform. For the most part, any interpretations or conclusions should be confined to the individual analyses.

When the term "accidents" is used in this analysis, it refers to all types of reported case data. The term "accidents" is subdivided into "injuries" and "illnesses", with "injuries" meaning traumatic accidents, and "illnesses" referring to all illness and occupational disease cases.

The analysis of each data source takes the following form. Accidents are summarized by accident cause in decreasing order with respect to the total number of reported cases. Within each accident cause, comparative statistical summaries are presented by year reported. Year reported is used rather than year of occurrence because the data is provided on that basis. If year of occurrence were used, then there always exists the problem of having to wait for several more reporting periods to pick up cases that occurred in the period of interest.

The statistical summaries include descriptive information such as number of accidents and fatalities, percent of the accidents with lost time, median age of workers, percent males, plus the most commonly occurring natures of injury, accident types, body parts affected, months of accident, and industry and occupation of the injured workers.

Some accident rates were calculated using the information on worker coverage supplied by the data sources. Since such data was sparse, other rates were calculated using USDA yearly estimates of the number of agricultural workers in each state[2,3,4].

To look at specific accident causes, attention should be focused on the tabular results in each chapter. The accompanying text summarizes only general findings or highlights and presents rate calculations.

Worker's Compensation Data Limitations

WC data that provide the basis for the analysis presented in this report may be less than fully accurate or representative. The limitations to be considered include:

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Incomplete geographical coverage
Lack of case record detail
Coding incompatability
Under reporting
Reporting errors

1. Incomplete Geographical Coverage. Information available for inclusion in this report comes from only eight agencies. The majority of case records are from California and from Puerto Rico. In both of these jurisdictions, all agricultural workers are covered under a compulsory WC system. Virtually all of middle America and the South is not represented in the data available for this report. The great grain, cattle, dairying, cotton, and tobacco areas are not represented. One must conclude that the data presented in this report is not geographically representative. While some additional states should be able to begin providing data as a result of recent improvements in their coverage of agriculture, it appears that worker's compensation data representative of the nation as a whole is unlikely in the next few years. While the agriculture of California is particularly diverse, it has not been demonstrated that California illness and injury rates for occupations connected with various products are representative of the national experience.

2. Lack of Case Record Detail. A particular difficulty in WC case records for agriculture is the lack of industry and occupational detail. For example, in California, all of agriculture is included in three broad standard industrial classification (SIC)[5] coded categories: 014, farms; 074, spray and pest control; and 075, other agricultural services. Further, in California, occupation shown on the Doctor's First Report of Work Injury is coded for machine analysis only for those instances where the hazard involved in the case is an agricultural chemical. If the hazard is not a chemical, occupation information is lost. Reasons for these deficiencies include a historical lack of need for the information as well as a lack of resources to provide additional detail. An important technical difficulty to be recognized is the diversity of tasks often accomplished by a single farm worker during a season: what is his occupation?

3. Coding Incompatability. Because each state has developed its WC system to meet a particular set of circumstances, there is little commonality in reporting. Although standard classification systems are usually used as a basis for case record coding, there are technical variations from state to state. These variations include the degree of classification, i.e., two or three digit SIC codes; special classifications to isolate certain hazards or crops important in a particular state; and the assumption used to code missing information, i.e., when sex is not indicated, assume male.

The result of the nonuniform coding is that summarizing data across state boundaries is risky at best.

For the present, statistical analysis is on a state-by-state basis. Conclusions applicable to the national experience are thus relatively subjective and can only be attempted in selected instances on the basis of thorough understanding of the coding problem.

4. Under Reporting. Beyond the limitations of WC coverage of agriculture, there is the likelihood of under reporting. Only those cases treated by a physician, judged to be of occupational cause, and officially reported are brought to light. Something less than all eligible cases are therefore available for analysis. The degree of under reporting may vary according to the kind of illness or injury. Special surveys designed to identify all eligible cases could be used to determine the degree of under reporting. Such surveys have not been made.

Under reporting may be most serious for occupationally related illness. WC has dealt primarily with injury cases, perhaps because the occupational cause of acute injury is more easily identified than that for an illness. The ratio of reported injuries to illnesses varies markedly from state to state. This suggests that, for agriculture at least, there is a difference in the degree to which occupation is considered the agent in illness. The result is uncertainty as to how representative the number of reported cases really is.

5. Reporting Errors. Focus on agricultural occupational illness is relatively new. Diagnostic evaluation and conclusions regarding occupational origin are perhaps less certain than in other industries. For example, there is anecdotal evidence that particular symptom sets have been diagnosed as pesticide poisoning when, in fact, the commonly used laboratory test of cholinesterase depression did not subsequently support such a diagnosis. Particularly where there are language or cultural barriers to patient-physician communication, incomplete identification of illness or hazardous circumstances may result in case records that are inaccurate. The increasing presence of a wide variety of new chemicals in the agricultural environment may also create the circumstance of increased difficulty of diagnostic precision in terms of occupational exposure.

CALIFORNIA

Accident and Employment Data

Employment Statistics*	1970	1971	1972	1973	1974	1975
Total Farm Workers	268,000	274,000	281,000	280,000	295,000	--
Hired Farm Workers	197,000	204,000	211,000	215,000	231,000	--

Worker's Compensation Coverage	1970	1971	1972	1973	1974	1975
Number of Workers Covered+	--	--	205,000	210,000	217,000	217,000
Type of Coverage	Compulsory, all farm workers					

Accident Cases Reported	1970	1971	1972	1973	1974	1975
Number of Injury Cases	12,449	11,881	11,697	12,739	10,394[a]	3,199[b]
Number of Illness Cases	2,750	2,925	2,998	3,126	2,927	2,198[a]
Type of Accident Cases	All illnesses (40% lost time) plus all lost time accidents					

* - USDA Statistical Reporting Service

+ - California Employment Development Department

a - Data for 1st 9 months only.

b - Data for April, May, June only.

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California Illness Data Analysis

Summaries of the reported variables are given by the hazard causing the illness and by the year reported. Data for 1975 is for the first nine months only. Table 7 presents a definition of variables and an indexed set of tabulations containing the number of illness occurrences, percent of cases hospitalized and with lost time, the median age of the injured worker, and the percent of cases which were males. When the sex of the worker was unknown, it was coded as male. For agricultural chemical hazards, the percent of workers with a Spanish surname is also given. Also given are the most commonly occurring categories and corresponding number of cases for illness type, month of illness, and industry. For agricultural hazards, the occupation of the worker is also presented.

Poison ivy, oak, and sumac caused the most illnesses (all were skin conditions). Other hazards causing large numbers of illness occurrences were insecticides, miscellaneous chemicals, organic phosphate pesticides, fruits and nuts, plants, fertilizers, herbicides, and vegetables. The highest proportion of lost time and hospitalized illnesses were from organic phosphate pesticides, temperature changes, halogenated hydrocarbon pesticides, carbamates, infectious agents, and environmental conditions. Organic phosphate pesticides and carbamates affected more younger workers than did other hazards. Hazards affecting the most female workers were fruits and nuts and nonedible plants. For agricultural hazards, insecticides affected the most Spanish surnamed workers, proportionately, while organic phosphate pesticides and carbamates affected the least number of Spanish surnamed workers, proportionately.

When agricultural chemicals were involved, agricultural laborers were the most numerous group suffering illnesses. Sprayers and drivers also experienced large numbers of illnesses. The industry most involved was the farm. Skin conditions were the most prevalent illness type, followed by eye conditions and systemic effects of toxic materials. May through August was the period when most of the illnesses occurred.

There were no dramatic increases in illnesses for any hazard in 1974 or 1975 but illnesses caused by agricultural sulfur increased slightly. There have been minor decreases in 1974 and 1975 over the previous years in the number of occurrences caused by temperature changes, halogenated hydrocarbon pesticides, environmental conditions, carbamates, and organic phosphate pesticides.

Using USDA estimates of the number of hired workers, the following illness rates have been calculated:

Year Reported	Illness Rate per 1,000 Workers per Year
1970	14.0
1971	14.3
1972	14.2
1973	14.5
1974	12.7

The illness rate for illnesses reported in 1974 was noticeably lower than the rates for previous years.

Using the California Employment Development Department monthly estimates of the number of workers, monthly illness rates have been calculated from 1972 through June, 1975. Figure 1 displays the seasonal trends over time. The rates were calculated by month and year of occurrence, not year reported, in order to most accurately use the employment estimates. A seasonal trend in the number of illnesses might be expected but the figure shows a seasonal trend in the illness rate also. This may be due to an increase per worker in the hours worked or amount of exposure during the peak agricultural months.

In order to investigate the most serious hazards and illnesses, Tables 3-4 summarize all lost time illness occurrences and Tables 5-6 summarize all cases with lost time of 15 days or more. The occurrences are tabulated by hazard or illness type and year of occurrence. Pesticides and other ag chemicals account for 40% of all lost time illness occurrences and 45% of all lost time cases of 15 days or more lost time. Environmental conditions account for 6% of the lost time and 12% of the 15 days or more lost time cases. Skin conditions and systemic effects account for 48% and 19% of the lost time occurrences. For lost time of 15 days or more, the percentages change to 31% and 32% for skin conditions and systemic effects.

Lost time illness rates for 1970 to 1974 based on USDA estimates of the number of hired workers are:

Year of Occurrence	Lost Time Illness Rate per 1,000 Workers per Year
1970	4.9
1971	5.0
1972	4.8
1973	4.7
1974	3.7

There has been a substantial drop in the lost time illness rate in 1974. Preliminary calculations with data from the first half of 1975 indicate a 1975 rate near but slightly higher than the 1974 rate.

Data on the amount of pesticides used in California was available for 1974[6]. Data was extracted for halogenated hydrocarbons, organic phosphates, carbamates, and sulfur. The number of illnesses in 1974 attributed to these hazards was used to calculate illness rates per million pounds of pesticides used.

(Text continues on page 23.)

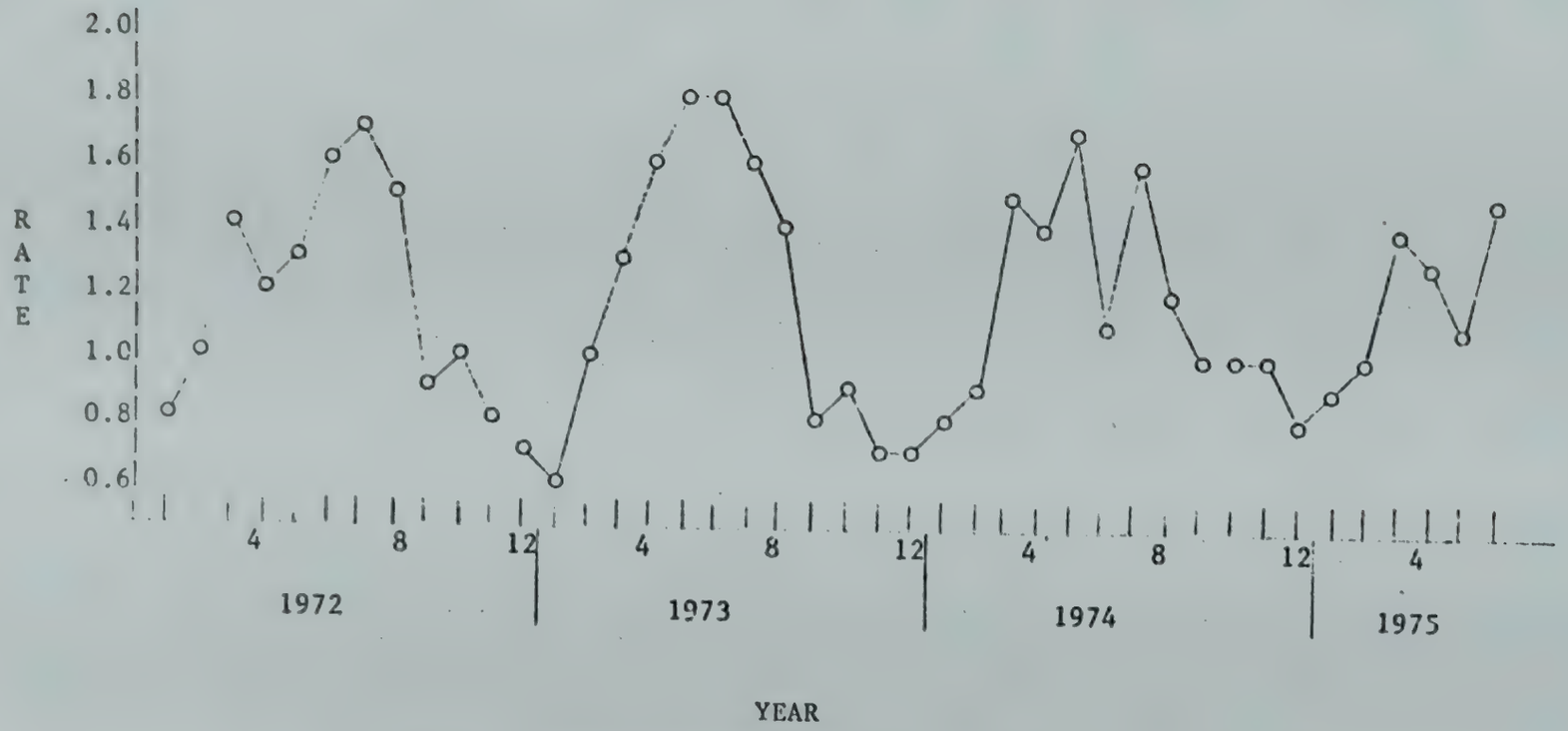

Figure 1. Monthly Illness Rates, California 1972-1975
(No. of illnesses per 1,000 workers per month)

Table 3. Hazards Causing Agricultural Illnesses in California, Tabulated by year -- All Lost Time Illness Occurrences

Hazard	# of Illness Occurrences 1970	1971	1972	1973	1974	Total
DUSTS	18	16	13	14	8	69
1. Inorganic Dusts	1	1	1	3	1	7
2. Organic Dusts	3	3	1	1	1	9
3. Dusts, N.E.C.	14	12	11	10	6	53
GASES	30	23	22	22	16	113
1. Ammmonia	6	2	3	6	3	20
2. Carbon Monoxide	4	4	3	1	3	15
3. Chlorine	10	9	7	5	4	35
4. Illuminating, utility, natural	7	3	3	8	3	24
5. Other, unspecified	3	5	6	2	3	19
HALOGENATED HYDROCARBON PESTICIDES	22	25	24	18	17	106
1. DDT, Chlordane, etc.	3	6	4	1	0	14
2. Endrin, Aldrin, etc.	4	2	1	0	1	8
3. Methyl Bromide	4	7	7	4	10	32
4. Other, unspecified	11	10	12	13	6	52
ORGANIC PHOSPHATE PESTICIDES	125	135	137	107	99	603
1. Parathion	48	43	41	27	32	191
2. Systox	4	5	2	6	2	19
3. Phosdrin	5	21	18	7	15	66
4. Malathion	3	0	0	3	6	12
5. Thimet	2	6	2	1	4	15
6. Guthion	2	3	3	1	4	13
7. Other, unspecified	61	57	71	62	36	187
OTHER AG CHEMICALS	241	263	265	253	210	1,232
1. Lead, Arsenic	4	1	2	2	2	11
2. Herbicides	36	38	51	34	32	191
3. Fertilizers	53	54	45	64	43	259
4. Fungicides	5	5	11	10	4	35
5. Phenolic Compounds	2	4	3	4	7	20
6. Other Pesticides & Fumigants	12	14	8	5	9	48
7. Carbamates	1	24	21	27	11	84
8. Sulfur	21	23	22	17	16	99
9. Insecticides	107	98	101	89	86	481
10. Other	0	2	1	1	0	4

Table 5(continued).

Hazard	# of Illness Occurrences 1970	1971	1972	1973	1974	Total
ELEMENTS, MAINLY METALS	1	1	3	5	5	15
SOLVENTS	4	6	11	6	12	39
OTHER CHEMICALS	86	80	94	126	86	472
1. Acids	17	16	17	13	15	78
2. Alkalis	5	1	9	4	5	24
3. Petroleum Fractions	14	15	11	20	13	73
4. Soap, Detergent, Cleaners	7	2	10	11	7	37
5. Medicines	2	6	3	10	0	21
6. Other	41	40	44	68	46	239
PLANT & ANIMAL PRODUCTS	170	166	182	185	174	877
1. Poison Ivy, Oak, Sumac	139	124	148	145	133	689
2. Weeds	7	4	6	9	4	30
3. Shrubs, Plants, Trees	15	24	18	19	28	104
4. Flowers	7	9	4	6	7	33
5. Other	2	5	6	6	2	21
FOOD PRODUCTS	116	123	99	80	79	497
1. Fruits & Nuts	76	73	46	37	51	283
2. Vegetables	36	42	48	38	22	186
3. Grain & Feed	2	7	5	5	5	24
4. Other	2	1	0	0	1	4
INFECTIOUS AGENTS	11	4	9	15	12	51
ENVIRONMENTAL CONDITIONS	54	94	58	62	24	292
1. Heat	38	69	32	45	12	196
2. Cold	0	2	5	2	3	12
3. Humidity	1	4	8	2	3	18
4. Physical Stress	9	13	10	3	4	39
5. Other	6	6	3	10	2	27
MISC. SUBSTANCES	2	3	3	4	9	21
UNKNOWN, OTHER	90	86	96	104	95	471
T O T A L:	970	1,025	1,016	1,001	846	4858

Table 4. Agricultural Illnesses in California, Tabulated by Year -- All Lost Time Illness Occurrences.

Illness	# of Illness Occurrences 1970	1971	1972	1973	1974	Total
INFECTIVE & PARASITIC DISEASES	9	2	8	13	11	43
1. Coccidiomycosis	3	1	4	5	5	18
2. Other	6	1	4	8	6	25
NERVOUS SYSTEM DISEASES	137	151	152	164	155	759
1. Eye Conditions	135	147	150	158	154	744
2. Ear Conditions	2	1	1	3	0	7
3. CNS, Nerve Conditions	0	3	1	3	1	8
CIRCULATORY SYSTEM DISEASES	10	15	18	11	8	62
1. Heart, Hypertensive Diseases	10	15	17	10	7	59
2. Arterial, Venous Diseases	0	0	1	1	1	3
RESPIRATORY CONDITIONS	39	54	46	58	34	231
1. Due to Non-toxic Materials	5	8	15	13	10	51
2. Due to Toxic Materials	34	46	31	45	23	179
DIGESTIVE CONDITIONS	4	8	16	2	4	34
1. Due to Toxic Materials	1	6	11	1	3	22
2. Other	3	2	5	1	1	12
SKIN DISEASES	489	463	470	450	440	2,312
1. Contact Dermatitis, Skin Allergy	470	447	459	437	429	2,242
2. Other	19	16	11	13	11	70
SYSTEMIC EFFECTS	181	201	219	206	139	946
1. Effects of Toxic Materials	132	155	158	140	105	690
2. Chemical Burns	49	46	61	66	34	256

Table 4(continued).

Illness	# of Illness Occurrences 1970	1971	1972	1973	1974	Total
EFFECTS OF WEATHER, EXPOSURE	36	65	34	42	15	192
1. Heat Effects	36	63	32	40	12	183
2. Other	0	2	2	2	3	9
EFFECTS OF TOXIC MATERIALS	52	51	49	49	33	234
OTHER	14	14	4	6	7	45
T O T A L:	970	1,025	1,016	1,001	846	4,858

Table 5. Hazards Causing Agricultural Illnesses in California, Tabulated by Year -- Occurrences with 15 or More Days Lost Time.

Hazard	# of Illness Occurrences 1970	1971	1972	1973	1974	Total
DUSTS	1	1	0	0	1	3
GASES	5	0	3	2	0	10
HALOGENATED HYDROCARBON PESTICIDES	2	3	0	1	0	6
ORGANIC PHOSPHATE PESTICIDES	17	17	16	14	14	78
1. Parathion	3	5	2	4	5	19
2. Phosdrin	2	5	5	0	1	13
3. Other, unspecified	12	7	9	10	8	46
AG CHEMICALS	10	16	11	24	16	77
1. Herbicides	1	3	0	1	2	7
2. Fertilizers	5	6	5	13	4	33
3. Carbamates	0	5	1	4	3	13
4. Insecticides	3	0	3	5	6	17
5. Other	1	2	2	1	1	7
ELEMENTS, SOLVENTS, MISC. CHEMICALS	5	1	7	4	5	22
PLANT & ANIMAL PRODUCTS	3	6	9	4	3	25
1. Poison Ivy, Oak, Sumac	1	2	4	4	2	13
2. Other	2	4	5	0	1	12
FOOD PRODUCTS	6	5	5	1	3	20
INFECTIOUS AGENTS	5	1	4	7	9	26
ENVIRONMENTAL CONDITIONS	10	12	11	4	5	42
1. Heat	2	2	1	1	1	7
2. Physical Stress	6	7	5	1	3	22
3. Other	2	3	5	2	1	13
OTHER, UNKNOWN	6	12	11	7	12	48
T O T A L:	70	74	77	68	68	357

Table 6. Agricultural Illnesses in California, Tabulated by Year -- Occurrences With 15 or More Days Lost Time

Illness	# of Illness Occurrences 1970	1971	1972	1973	1974	Total
INFECTIVE AND PARASITIC DISEASES	5	1	4	6	9	25
1. Coccidiomycosis	3	1	3	4	3	14
2. Other	2	0	1	2	6	11
NERVOUS SYSTEM DISEASES	1	4	3	10	8	26
1. Eye Conditions	1	3	2	9	8	23
2. Other	0	1	1	1	0	3
CIRCULATORY SYSTEM DISEASES	6	7	8	5	4	30
RESPIRATORY CONDITIONS	3	3	8	4	3	21
1. Due to Non-toxic Materials	0	1	5	1	1	8
2. Due to Toxic Materials	3	2	3	3	2	13
SKIN DISEASES	24	24	25	15	21	109
1. Contact Dermatitis, Skin Allergy	23	23	24	13	19	102
2. Other	1	1	1	2	2	7
SYSTEMIC EFFECTS	22	28	24	23	16	113
1. Effects of Toxic Materials	17	23	18	16	14	88
2. Chemical Burns	5	5	6	7	2	25
EFFECTS OF WEATHER AND EXPOSURE	3	3	1	1	1	9
EFFECTS OF TOXIC MATERIALS	3	1	1	2	5	12
OTHER	3	3	3	2	1	12
T O T A L:	70	74	77	68	68	357

Chemical	Million lbs. used in 1974	Number of Illnesses in 1974	Illness Rate Per Million lbs. per year
Sulfur	16.2	63	3.9
Organic Phosphates	6.3	156	24.8
Halogenated Hydrocarbons	4.8	29	6.0
Carbamates	1.5	23	15.3

In terms of illnesses per amount used, the organic phosphate and carbamate pesticides are several times more hazardous than either sulfur or halogenated hydrocarbon pesticides.

Table 7. California Illness Case Data Tabulations

Note: A description of some of the variables used in the tabulations is given below. On the next page is an index that allows the reader to find statistics for a particular hazard. To see all statistics for a given hazard be sure to look at both pages shown in the index.

Description of Variables

Occupation

- Sprayer - Sprayer (farm and agricultural services only)
- Picker - Picker
- Ag Laborer - Agricultural laborer, N.E.C. (includes swampers, flagmen)
- Driver - Truck driver (any industry), tractor operator, heavy equipment operator (operator engineer)

Industry

- Farm - Agricultural production (includes labor contractor and farm labor associations
- Ag Service - Other agricultural services except farm labor and pest control
- Pest Control - Spray and pest control

Illness Type

- Skin - Diseases of the skin and cellular tissue
- Eye - Conditions of the eye due to toxic materials (including chemical burns to eyes) and other eye conditions
- Systemic - Systemic effects of toxic materials (poisoning) (more than one system affected)
- Symptoms - Symptoms (fainting, nausea - when only one sign or symptom is given or reported)
- Burn - Chemical burns
- Exposure - Effects of weather, exposure and related conditions
- Respiratory - Diseases of the respiratory system due to toxic and nontoxic materials
- Circulatory - Diseases of the circulatory system
- Infective - Infective and parasitic diseases (hazard always primary infection)

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California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Poison Ivy, Oak, Sumac	1970	610	25	0	30	94	-
	1971	684	21	0	30	94	-
	1972	816	22	0	29	96	-
	1973	860	20	0	26	95	-
	1974	920	18	0	27	95	-
	1975+	621	19	0	27	95	-
Insecticides N.E.C.	1970	308	43	2	36	85	51
	1971	313	39	0	34	81	49
	1972	288	38	1	36	84	60
	1973	291	38	1	31	83	62
	1974	260	39	1	30.5	82	60
	1975+	167	36	0	31	84	62

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Poison Ivy, Oak, Sumac	1970	-	Farm-500, Ag Service-108	Sept-77, July-66 Aug-64	Skin-610
	1971	-	Farm-543, Ag Service-136	Aug-96, July 81	Skin-684
	1972	-	Farm-629, Ag Service-175	July-112, June-92 Aug-91	Skin-816
	1973	-	Farm-666, Ag Service-185	June-123, July-115	Skin-860
	1974	-	Farm-726, Ag Service-186	July-130, May-108	Skin-920
	1975+	-	Farm-541, Ag Service-78	June-103, July-89 May-73	Skin-621
Insecticides N.E.C.	1970	Ag Laborer-187 Sprayer-51	Farm-267	June-36, May-35 Aug-35	Skin-170, Eye-80
	1971	Ag Laborer-177 Sprayer-66	Farm-267	July-44, April-43 May-25	Skin-180, Eye-97
	1972	Ag Laborer-162 Sprayer-56 Picker-36	Farm-260	July-48, June-28 Aug-34	Skin-162, Eye-93
	1973	Ag Laborer-165 Sprayer-59	Farm-250	Aug-44, June-41 May-37	Skin-176, Eye-75
	1974	Ag Laborer-141 Sprayer-49	Farm-218	Aug-42, May-38 June-35, July-35	Skin-159, Eye-74
	1975+	Ag Laborer-75 Sprayer-43	Farm-134	June-35, May-21 July-19	Skin-94, Eye-64

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Miscellaneous Chemicals and Substances	1970	166	37	0	35	86	-
	1971	211	34	0	32.5	85	-
	1972	195	37	2	35	87	-
	1973	266	42	1	30.5	82	-
	1974	224	38	1	30	81	-
	1975+	167	36	2	27	80	-
Organic Phosphate Pesticides	1970	244	64	26	28.5	94	36
	1971	197	79	35	29	99	26
	1972	221	76	30	25	96	32
	1973	182	73	21	25	98	44
	1974	152	82	37	24	98	30
	1975+	99	77	25	24	96	25

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Miscellaneous Chemicals and Substances	1970	-	Farm-127	June-20, Aug-19	Eye-69, Skin-68
	1971	-	Farm-170	Aug-34, July-29 June-25	Eye-87, Skin-83
	1972	-	Farm-154	May-26, March-21 Aug-20, June-20	Eye-86, Skin-76
	1973	-	Farm-209	May-40, Aug-39 July-34	Skin-116, Eye-102
	1974	-	Farm-183	June-30, April-26 Sept-25	Skin-109, Eye-86
	1975+	-	Farm-136	July-28, April-26 June-25	Skin-80, Eye-56
Organic Phosphate Pesticides	1970	Ag Laborer-114 Picker-42 Sprayer-39	Farm-144 Pest Control-49	Sept-44, Aug-42 May-33	Systemic-162
	1971	Ag Laborer-113 Sprayer-30	Pest Control-113 Farm-83	Aug-47, July-27 Sept-24	Systemic-138
	1972	Ag Laborer-98 Sprayer-53	Pest Control-113 Farm-108	Aug-32, May-32 June-29	Systemic-159
	1973	Ag Laborer-77 Sprayer-38 Picker-28	Pest Control-100 Farm-82	Aug-45, July-26 May-24	Systemic-130
	1974	Ag Laborer-58 Sprayer-44	Pest Control-92 Farm-60	May-25, Sept-24 July-22	Systemic-97
	1975+	Ag Laborer-47 Sprayer-23	Pest Control-51 Farm-47	May-20, April-19 June-13	Systemic-56 Symptoms-22

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Fruits and Nuts	1970	175	49	0	37	59	-
	1971	207	41	0	36	55	-
	1972	119	44	0	34	64	-
	1973	115	38	1	33	59	-
	1974	157	35	0	32	59	
	1975*	90	41	0	30	57	-
Nonedible Plants	1970	95	35	1	31	57	-
	1971	138	34	0	30.5	61	-
	1972	117	31	0	33.5	56	
	1973	125	30	0	33	59	-
	1974	125	36	0	27	50	-
	1975	110	23	0	30	55	-

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Fruits and Nuts	1970	-	Farm-174	Aug-36, July-28 Sept-23	Skin-165
	1971	-	Farm-202	July-45, Aug-40 Sept-29	Skin-195
	1972	-	Farm-119	Aug-29, July-20 Oct-15	Skin-106
	1973	-	Farm-115	Aug-23, June-22 July-20	Skin-106
	1974	-	Farm-157	Aug-30, July-24 May-23	Skin-153
	1975+	-	Farm-90	July-21, May-16 June-15	Skin-88
Nonedible Plants	1970	-	Farm-85	Sept-14, June-13 May-12	Skin-86
	1971	-	Farm-123	Aug-15, July-14 Oct-14	Skin-123
	1972	-	Farm-112	May-16, June-15 Aug-15	Skin-109
	1973	-	Farm-111	May-22, June-15 July-15	Skin-115
	1974	-	Farm-116	March-18, April-15 June-14	Skin-122
	1975+	-	Farm-98	April-21, June-19	Skin-97

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Fertilizers	1970	108	59	8	38	96	47
	1971	112	53	7	37	96	36
	1972	117	46	8	34	97	40
	1973	140	53	8	34	94	43
	1974	95	55	6	38	95	55
	1975+	108	59	8	30	94	62
Herbicides	1970	124	35	3	31.5	100	29
	1971	101	44	3	32	100	36
	1972	116	50	1	27	97	42
	1973	96	44	2	24	94	49
	1974	89	44	3	30	100	63
	1975+	74	44	4	25	97	47

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Fertilizers	1970	Ag Laborer-68 Driver-20	Farm-80 Pest Control-23	May-20, June-20 April-13	Eye-54, Burn-26
	1971	Ag Laborer-72 Driver-21	Farm-87 Pest Control-23	June-16, March-14 April-14, May-14 July-14	Eye-51, Burn-21 Skin-18
	1972	Ag Laborer-76	Farm-90 Pest Control-22	May-21, June-18 March-15	Eye-59, Burn-28
	1973	Ag Laborer-79 Driver-31	Farm-98 Pest Control-41	May-40, April-21 June-19	Eye-56, Burn-38 Skin-21
	1974	Ag Laborer-59	Farm-75 Pest Control-19	May-22, June-13 April-12	Eye-38, Skin-18 Burn-17
	1975+	Ag Laborer-62 Driver-15	Farm-85 Pest Control-21	April-20, June-17 May-15	Eye-56, Skin-19 Burn-18
Herbicides	1970	Ag Laborer-51 Sprayer-39	Farm-100	April-20, July-19 June-16	Eye-53, Skin-41
	1971	Ag Laborer-44 Sprayer-42	Farm-85	July-17, Aug-15 June-14	Eye-54, Skin-25
	1972	Ag Laborer-52 Sprayer-47	Farm-102	June-26, Aug-25 July-20	Eye-58, Skin-30
	1973	Sprayer-39 Ag Laborer-39	Farm-71 Pest Control-16	April-16, June-14 July-14	Eye-44, Skin-28
	1974	Sprayer-36 Ag Laborer-35	Farm-75	May-16, April-14 July-12, Aug-12	Eye-40, Skin-30
	1975+	Sprayer-31 Ag Laborer-26	Farm-62	June-19, July-11 May-9	Eye-28, Skin-25

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Temperature	1970	68	71	15	38	85	-
	1971	87	87	16	31	89	-
	1972	67	68	16	34	93	-
	1973	79	76	14	36.5	87	-
	1974	31	65	3	40	81	-
	1975+	33	67	9	27	85	-
Agricultural Sulfur	1970	45	55	2	38	78	56
	1971	57	44	2	30	77	47
	1972	57	45	2	36	91	51
	1973	43	50	0	27.5	79	51
	1974	61	30	0	32	84	59
	1975+	47	37	0	34	83	47

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Vegetables	1970	-	Farm-86	July-13, March-10 June-10	Skin-84
	1971	-	Farm-84	June-16, Sept-16 Aug-12	Skin-83
	1972	-	Farm-92	Aug-14, June-12	Skin-93
	1973	-	Farm-85	June-15, Oct-14 Aug-10	Skin-81
	1974	-	Farm-89	June-19, July-14 Sept-10	Skin-89
	1975+	-	Farm-72	June-18, July-16	Skin-68
Acids, Alkalis	1970	-	Farm-54	Oct-9, July-8	Eye-37, Burn-19
	1971	-	Farm-48	Feb-7, June-7 April-6	Eye-41, Burn-10
	1972	-	Farm-66	Aug-11, April-9 Sept-8	Eye-54, Burn-16
	1973	-	Farm-52	Oct-8, June-7 Aug-7	Eye-44. Burn-11
	1974	-	Farm-55	Sept-8, Nov-8 Feb-7	Eye-48
	1975+	-	Farm-53	July-10, June-9 March-8	Eye-46, Burn-11

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Temperature	1970	-	Farm-66	July-20, June-18 Aug-16	Exposure-61
	1971	-	Farm-80	July-28, Aug-28	Exposure-76
	1972	-	Farm-62	July-25, Aug-15 June-14	Exposure-54
	1973	-	Farm-72	June-30, May-15 July-14	Exposure-68
	1974	-	Farm-30	July-12, June-5	Exposure-27
	1975*	-	Farm-33	July-13, June-7	Exposure-32
Agricultural Sulfur	1970	Ag Laborer-29	Farm-39	June-10, Aug-8 May-7	Skin-20, Eye-18
	1971	Ag Laborer-41	Farm-49	June-19, July-12 May-7	Skin-24, Eye-21
	1972	Ag Laborer-34 Sprayer-9	Farm-49	May-14, June-12 July-8	Skin-25, Eye-25
	1973	Ag Laborer-27 Sprayer-8	Farm-37	June-12, May-9 April-7	Eye-19, Skin-11 Respiratory-7
	1974	Ag Laborer-38	Farm-52	July-14, May-11	Skin-28, Eye-24
	1975*	Ag Laborer-27 Sprayer-11	Farm-45	June-13, May-10	Eye-18, Skin-17

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Gases	1970	58	50	14	36.5	86	-
	1971	52	54	8	36	83	-
	1972	56	46	9	38	80	-
	1973	50	49	2	38	80	-
	1974	40	48	10	35.5	93	-
	1975+	47	59	6	26	70	-
Dusts	1970	43	39	0	42.5	93	-
	1971	43	51	0	41.5	77	-
	1972	43	35	0	38	91	-
	1973	42	40	0	35	93	-
	1974	36	29	3	29	78	-
	1975+	30	46	3	34.5	87	-

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Gases	1970	-	Farm-55	Feb-8, July-7	Eye-19, Burn-11 Respiratory-11
	1971	-	Farm-46	July-8, Jan-7 Dec-7	Eye-17, Burn-10 Respiratory-9
	1972	-	Farm-50	June-11, May-9	Eye-16, Burn-11 Skin-8, Symptoms-8
	1973	-	Farm-43	June-9, Nov-7 April-6, Sept-6	Burn-11, Respiratory-10 Symptoms-9, Eye-8
	1974	-	Farm-38	July-6, May-5 June-5, Aug-5	Burn-12, Symptoms-8 Respiratory-8, Eye-8
	1975+	-	Farm-42	Jan-12, March-6 July-6	Systemic-13, Eye-12 Symptoms-7
Dusts	1970	-	Farm-36	Aug-9, March-7	Skin-18, Eye-12 Respiratory-11
	1971	-	Farm-41	May-8, June-7	Eye-20, Respiratory-11 Skin-9
	1972	-	Farm-39	Aug-9, April-7 May-7, Oct-7	Eye-16, Respiratory-13 Skin-12
	1973	-	Farm-29	Aug-8, April-7 July-6	Eye-14, Respiratory-14 Skin-11
	1974	-	Farm-33	May-6, Aug-5	Eye-16, Respiratory-9 Skin-8
	1975+	-	Farm-28	May-7, June-6	Eye-14, Skin-8 Respiratory-6

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Petroleum Fractions	1970	46	40	2	42	91	-
	1971	39	46	0	40.5	95	-
	1972	39	35	0	40	97	-
	1973	44	47	0	31.5	95	-
	1974	45	42	2	31	87	-
	1975+	23	33	4	35	100	-
Halogenated Hydrocarbon Pesticides	1970	48	48	2	30	98	48
	1971	38	68	13	36.5	97	34
	1972	44	69	14	37	98	27
	1973	44	69	7	29.5	98	45
	1974	28	64	11	27	100	32
	1975+	24	64	8	35.5	92	54

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Petroleum Fractions	1970	-	Farm-43	Sept-7, June-5 Oct-6	Skin-20, Eye-19
	1971	-	Farm-35	July-7, Aug-6 Sept-6, Oct-5	Eye-16, Skin-12
	1972	-	Farm-34	Aug-6, Sept-5	Eye-21, Skin-11
	1973	-	Farm-38	July-7, June-6	Eye-19, Burn-11 Skin-9
	1974	-	Farm-35	July-9, Sept-8 March-7	Skin-21, Eye-14
	1975+	-	Farm-18	June-4, Feb-3 March-3, May-3 July-3	Eye-11, Burn-6
Halogenated Hydrocarbon Pesticides	1970	Ag Laborer-27	Farm-35 Pest Control-10	April-7, July-7 Sept-7	Skin-14, Eye-8
	1971	Ag Laborer-24	Farm-22 Pest Control-13	March-7, June-7 Sept-6	Skin-11, Burn-9 Systemic-8
	1972	Ag Laborer-13 Sprayer-8	Farm-32 Pest Control-12	June-7, July-6	Eye-9, Systemic-8 Symptoms-8
	1973	Ag Laborer-28	Farm-32 Pest Control-10	June-15, May-6	Skin-17, Burn-10 Eye-7
	1974	Ag Laborer-8 Driver-5 Sprayer-5	Farm-19 Pest Control-9	Sept-6, July-5 June-4	Eye-11, Skin-9
	1975+	Ag Laborer-11	Farm-16 Pest Control-8	Feb-5, April-4 July-4	Eye-7, Skin-4 Systemic-4

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Environmental Conditions	1970	35	48	14	35.5	89	-
	1971	51	57	25	37.5	90	-
	1972	36	66	28	42.5	83	-
	1973	36	55	19	38.5	78	-
	1974	21	50	19	38.5	95	-
	1975+	19	27	16	24	79	-
Carbamates	1970	8	17	0	21.5	88	38
	1971	34	86	35	21	100	24
	1972	33	72	24	21.5	100	15
	1973	36	82	56	33	83	34
	1974	[illegible]	59	36	23	100	36
	1975+	22	64	23	23.5	95	50

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Environmental Conditions	1970	-	Farm-30	Jan-6, April-4 Sept-4	Skin-11, Circulatory-7
	1971	-	Farm-45	July-11, March-6 Oct-6, Aug-6	Skin-18, Circulatory-13
	1972	-	Farm-34	Aug-8, Oct-6 Sept-5	Circulatory-12, Respiratory-6, Skin-6
	1973	-	Farm-27	May-5, July-5 Aug-4, Dec-4	Ear-8, Skin-6
	1974	-	Farm-16	Aug-4, May-3 Nov-3	Skin-7, Respiratory-5
	1975+	-	Farm-14	March-4, Dec-3	Skin-7, Circulatory-5 Eye-4
Carbamates	1970	Ag Laborer-6	Farm-4, Pest Control-4	Sept-3, June-2 July-2	Symptoms-4
	1971	Ag Laborer-26	Pest Control-26 Farm-8	Aug-13, Sept-5	Systemic-21
	1972	Ag Laborer-20	Pest Control-23 Farm-10	Aug-8, Sept-8 June-6	Systemic-21
	1973	Ag Laborer-18 Sprayer-7	Pest Control-29 Farm-7	Aug-11, June-6 Oct-5	Systemic-27
	1974	Ag Laborer-9 Sprayer-9	Pest Control-11 Farm-11	Aug-10	Systemic-18
	1975+	Ag Laborer-14 Sprayer-5	Farm-13, Pest Control-8	March-4, April-4 June-4, July-4	Systemic-11

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Fumigants	1970	23	52	9	33.5	96	30
	1971	37	52	5	37.5	89	41
	1972	24	44	0	29	92	29
	1973	15	50	0	38	93	53
	1974	21	53	10	25	95	43
	1975+	21	37	5	28	95	43
Infectious Agents	1970	25	45	12	29	72	-
	1971	14	50	0	28.5	86	-
	1972	19	56	5	27	95	-
	1973	35	78	14	31	97	0
	1974	20	68	10	25.5	85	-
	1975+	18	38	11	29	83	-

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Fumigants	1970	Ag Laborer-11 Sprayer-4	Farm-16	Aug-5, June-4 May-3	Eye-10, Skin-5 Systemic-5
	1971	Ag Laborer-23	Farm-31	July-6, Oct-5 Jan-5	Eye-13, Skin-10
	1972	Ag Laborer-8 Sprayer-7	Farm-15 Pest Control-9	June-8	Skin-8, Eye-7
	1973	Ag Laborer-6 Sprayer-5	Farm-11	Aug-5, July-3	Eye-6, Skin-4
	1974	Ag Laborer-10 Sprayer-9	Farm-14 Pest Control-7	June-5, July-4 Aug-3	Skin-10, Eye-8
	1975+	Ag Laborer-12	Farm-19	April-4	Eye-9, Skin-8
Infectious Agents	1970	-	Farm-19	Feb-5, Sept-3 Dec-3	Skin-16, Infective-8
	1971	-	Farm-11	April-3, Oct-3 Nov-2	Infective-7 Skin-6
	1972	-	Farm-16	Dec-4, Jan-3 April-3, June-3	Infective-9 Skin-8
	1973	-	Farm-34	April-18, May-6	Infective-30
	1974	-	Farm-16	May-5	Infective-12 Skin-7
	1975+	-	Farm-13	Nov-4, Aug-3 July-3	Skin-10 Infective-7

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Fungicides	1970	17	47	6	37	82	53
	1971	14	50	0	42	100	36
	1972	23	55	13	32	91	26
	1973	25	50	8	31	88	24
	1974	21	29	0	38	95	33
	1975+	15	40	0	36	80	47
Solvents	1970	22	17	0	35	91	-
	1971	11	60	9	36	100	-
	1972	27	52	0	39	100	-
	1973	18	35	0	22	100	-
	1974	23	55	0	23.5	91	-
	1975+	9	17	11	27	100	-

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Fungicides	1970	Ag Laborer-11	Farm-13	Feb-4, Jan-3	Skin-7, Eye-5
	1971	Ag Laborer-7	Farm-10	Jan-3, March-3 April-3	Skin-5, Burn-3
	1972	Ag Laborer-14	Farm-17	April-4, Aug-4 June-3, July-3	Skin-9, Eye-6
	1973	Ag Laborer-18	Farm-19	July-5	Skin-12, Eye-7
	1974	Ag Laborer-8 Sprayer-5	Farm-14 Pest Control-7	July-4, Oct-4 Sept-3	Skin-11, Eye-6
	1975*	Laborer-8 Sprayer-5	Farm-12	March-3, May-3	Skin-8, Eye-4
Solvents	1970	-	Farm-16	July-5, April-4 March-3	Eye-9, Skin-8
	1971	-	Farm-10	July-3, May-2 Aug-2	Skin-5, Burn-4
	1972	-	Farm-21	July-6, April-3 Sept-3, Oct-3	Skin-10, Eye-10
	1973	-	Farm-12	Aug-4, March-3	Eye-8, Skin-6
	1974	-	Farm-18	Jan-4, April-4 July-4	Skin-9, Eye-7 Burn-7
	1975*	-	Farm-8	Jan-2, June-2 July-2	Eye-5, Skin-3

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Miscellaneous Food Products	1970	17	36	6	36.5	71	-
	1971	25	38	0	40	88	-
	1972	21	29	5	30	81	-
	1973	18	31	0	31	94	-
	1974	12	50	0	34	92	-
	1975*	11	44	0	29	73	-
Miscellaneous Plant and Animal Products	1970	12	30	8	33.5	100	-
	1971	14	33	0	27	93	-
	1972	18	25	6	32	78	-
	1973	24	56	4	30.5	71	-
	1974	14	17	7	33	71	-
	1975*	12	11	0	22	75	-

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Miscellaneous Food Products	1970	-	Farm-15	July-3, May-3	Skin-11
	1971	-	Farm-23	July-5, Aug-5 May-4	Skin-15, Respiratory-5
	1972	-	Farm-19	June-9, April-3	Skin-11, Respiratory-7
	1973	-	Farm-15	May-5, April-3 July-3	Skin-13
	1974	-	Farm-10	May-4, Feb-3	Skin-7
	1975+	-	Farm-10	July-4	Skin-8
Miscellaneous Plant and Animal Products	1970	-	Farm-10	Oct-2	Skin-9
	1971	-	Farm-14	Sept-4	Skin-10
	1972	-	Farm-12 Ag Service-6	July-4, Aug-3 Dec-3	Skin-8, Respiratory-6
	1973	-	Farm-20	April-6, May-5	Skin-16
	1974	-	Farm-8 Ag Service-6	May-4	Skin-11
	1975+	-	Farm-8	May-3, June-2	Skin-8

California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
Miscellaneous Agricultural Chemicals	1970	13	58	23	33	77	62
	1971	16	27	6	32	100	25
	1972	10	67	20	34	100	40
	1973	15	33	0	23	93	47
	1974	19	50	11	26	95	42
	1975*	15	67	7	22	80	60
Unknown	1970	286	-	-	-	-	-
	1971	290	-	-	-	-	-
	1972	320	-	-	-	-	-
	1973	376	-	-	-	-	-
	1974	342	-	-	-	-	-
	1975*	283	-	-	-	-	-

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
Miscellaneous Agricultural Chemicals	1970	Ag Laborer-6 Picker-3 Sprayer-3	Farm-13	July-6, June-4 Dec-3	Symptoms-5, Eye-3
	1971	Ag Laborer-10 Sprayer-5	Farm-12	July-4, Feb-3 May-3	Symptoms-4, Eye-3 Systemic-3
	1972	Ag Laborer-4 Sprayer-4	Farm-8	May-2	Systemic-4 Skin-3
	1973	Ag Laborer-9 Sprayer-5	Farm-15	July-3, Aug-3	Eye-10
	1974	Ag Laborer-11 Sprayer-5	Farm-18	May-5, July-3	Eye-6, Skin-4 Systemic-4, Burn-4
	1975+	Ag Laborer-8 Sprayer-5	Farm-15	Jan-3, April-3 July-3	Systemic-7, Skin-5
Unknown	1970	-	-	-	-
	1971	-	-	-	-
	1972	-	-	-	-
	1973	-	-	-	-
	1974	-	-	-	-
	1975	-	-	-	-

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California Illness: Descriptive Statistics

Hazard	Year Reported	No. of Illnesses	% with Lost Time	% Hospitalized	Median Age	% Males	% with Spanish Surname
All Hazards	1970	2750	41	5	34	86	44
	1971	2925	42	5	33	85	39
	1972	2998	40	5	31	88	43
	1973	3126	39	4	29	86	50
	1974	2927	35	4	28	85	51
	1975[†]	2198	35	3	28	85	51

California Illness: Most Common Categories - No. of Cases

Hazard	Year Reported	Occupation	Industry	Month of Illness	Illness Type
All Hazards	1970	Ag Laborer-510 Sprayer-152 Driver-94	Farm-2281, Pest Control-245 Ag Service-224	July-325, Aug-324 June-296	Skin-1630, Eye-443 Systemic-201
	1971	Ag Laborer-538 Sprayer-166 Driver-57	Farm-2392 Pest Control-276 Ag Service-257	Aug-425, July-421 June-317	Skin-1763, Eye-482 Systemic-195
	1972	Ag Laborer-481 Sprayer-192 Driver-71	Farm-2424 Ag Service-307 Pest Control-267	Aug-399, July-392 June-391	Skin-1795, Eye-504 Systemic-214
	1973	Ag Laborer-466 Sprayer-173 Driver-73	Farm-2504 Ag Service-324 Pest Control-298	June-441, July-404 May-398	Skin-1942, Eye-473 Systemic-194
	1974	Ag Laborer-377 Sprayer-176 Driver-69	Farm-2400 Ag Service-286 Pest Control-241	May-398, July-392 Aug-327	Skin-2051, Eye-419 Systemic-145
	1975+	Ag Laborer-290 Sprayer-137 Driver-52	Farm-1872 Ag Service-166 Pest Control-160	June-379, July-327 May-261	Skin-1461, Eye-363 Systemic-107

+ - 1975 data is composed of data reported for the 1st 9 months only.

California Injury Data Analysis

Summaries of the reported variables are given by the cause of the injury and by the year reported. Table 8 presents a definition of variables and an indexed set of tabulations. Data for 1974 is for the first nine months only, and 1975 data is for the second quarter (April-June). The actual month and year of the injury were not coded by the data source and age coding was discontinued after 1973. When sex was unknown, it was coded as male. The table presents the number of lost time injuries and fatalities, the median age of the worker, and the percent of the injured workers who were male. Also given are the most commonly occurring categories and corresponding numbers of cases for month of the report, industry, accident type, nature of injury, and body part affected.

The most prevalent causes of injuries were working surfaces, tools, machines, animals, containers, tractors, motor vehicles, ladders, and wood items. Tractors, motor vehicles, and machines caused the most fatalities. Approximately 90% of the cases were coded as males and the median age was in the middle thirties. The accident cause injuring most of the females was pressure and motion. Poisonous plants injured the youngest workers. Months reporting the most injuries were July and October. Most accidents occurred on field crop farms, fruit and nut farms, and livestock and dairy farms. Falls, being struck by or striking against objects, and overexertion were the most common accident types. Strains, cuts, fractures, and bruises were the usual natures of injury. Backs and fingers were the usual body part affected.

The data show large increases in the number of injuries from working surfaces since 1973 and large decreases in the number of injuries from ladders for the same time period; however, these differences only reflect coding changes implemented in 1973. Of interest is the large number of fatalities, mostly highway motor vehicle deaths, in the first nine months of 1974.

For the years 1970 to 1973, 77% of the injuries for each year were reported during the first nine months. If this proportion holds true for 1974, then there would be 13,499 cases for the entire year, higher than any of the previous years. Applying similar proportions to each accident cause, it can be seen that 1973 and 1974 reported substantially increased numbers of injuries than previous years due to tools, highway motor vehicles, injurious substances, flying particles, and chemicals. Injuries due to tractors have been on the decline since 1970.

Using USDA estimates of the number of hired workers, the following injury rates have been calculated:

Year Reported	Lost Time Injury Rate per 1,000 Workers per Year
1970	63
1971	58
1972	55
1973	59
1974 (Estimated)	58

Using the California Employment Development Department monthly estimates of the number of workers, monthly illness rates have been calculated from 1972 to 1975 and are shown in Figure 2. Since the actual month of injury is not given, the month reported was used, resulting in rates which are probably more variable than actual rates would be. There are no predominant seasonal trends but there are large month-to-month variations.

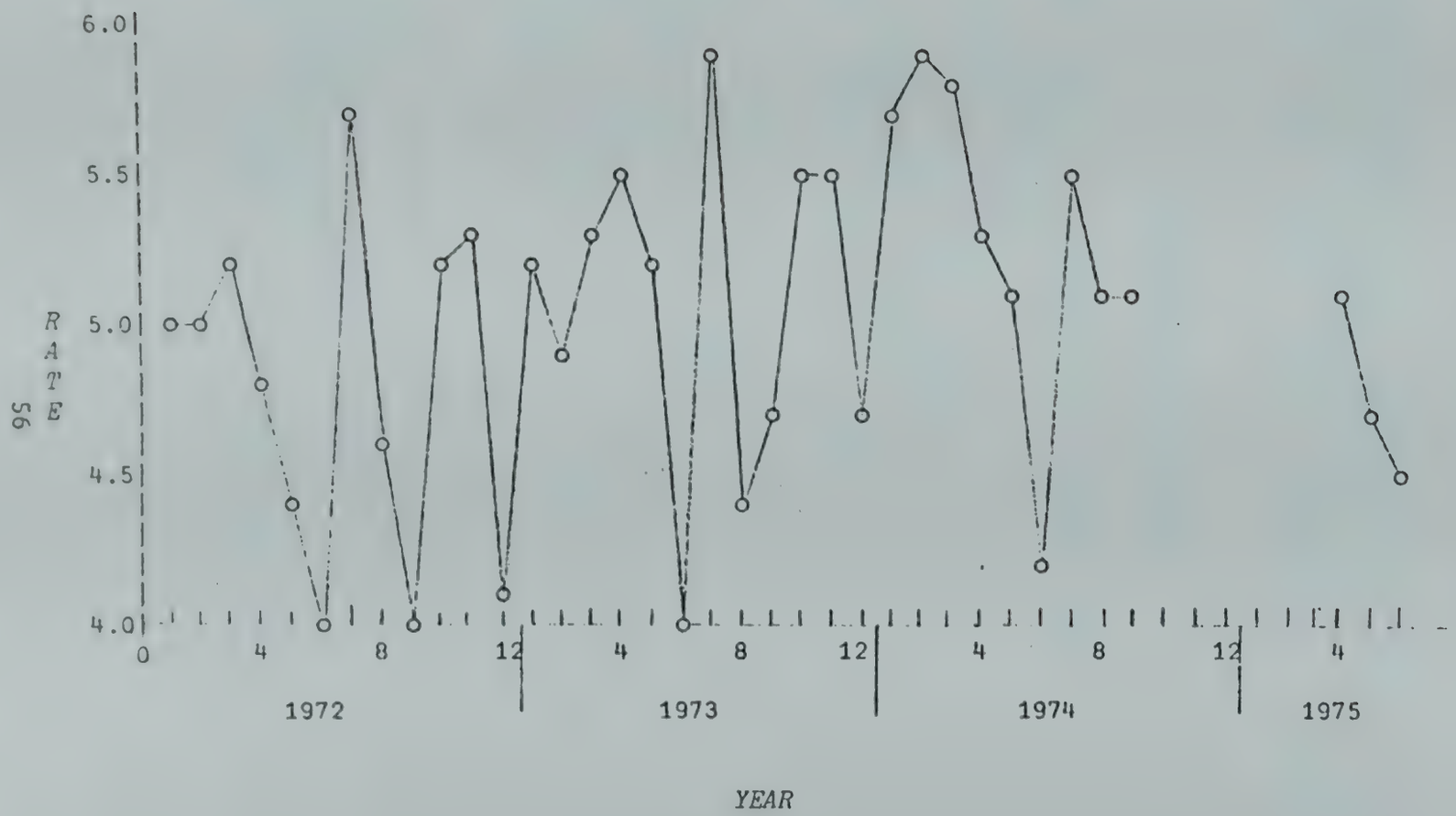

Figure 2. Monthly Injury Rates, California 1972-1975
(No. of injuries per 1,000 workers per month)

Table 8. California Injury Case Data Tabulations

Note: A description of some of the variables used in the tabulations is given below. On the next page is an index that allows the reader to find statistics for a particular accident cause. To see all statistics for a given accident cause, be sure to look at both pages in the index.

Description of Variables

Industry

- Field Crop - Field crop, vegetable, and general farms
- Fruit, Nut - Tree-fruit and tree-nut farms, orchards
- Livestock - Dairy and livestock farms
- Vineyard - Grapes, vineyards
- Hort. Service - Horticultural Services
- An. Husb. - Animal husbandry services
- Nursery - Nurseries and greenhouses
- Pest Control - Spraying and pest control
- Ag Services - Other agricultural services

Accident Type

- Fall - Falls or slips (on same level and from elevation)
- Struck - Struck by or striking against
- Overexertion - Strain or overexertion (except heart)
- Caught - Caught in or between
- Motor Vehicle - Accidents involving moving motor vehicles
- Eye - Foreign substance in eye
- Toxic Contact - Contact with radiation, caustics, toxic or noxious substances
- Explosion - Explosions, flare back, etc. (except electrical)

Nature of Injury

- Strain - Strains, sprains, dislocation, hernias (not including heart strains
- Cut - Cuts, lacerations, punctures, abrasions
- Bruise - Bruises, contusions
- Eye - Eye injuries, N.E.C.
- Skin Diseases - Diseases of the skin and subcutaneous tissue

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California Injury: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Working Surfaces	1970	1797	4	37	82
	1971	1664	2	37	87
	1972	1710	0	35	86
	1973	2481	1	37	86
	1974-a	2097	2	-	86
	1975-b	705	1	-	84
Tools	1970	1408	3	34	85
	1971	1490	0	33	93
	1972	1425	2	31	93
	1973	1529	1	33	91
	1974-a	1314	2	-	93
	1975-b	359	0	-	91

California Injury: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Month Reported	Industry	Accident Type	Nature of Injury	Body Part Affected
Working Surfaces	1970	July-184, Sept-178, Aug-175	Field Crop-577, Fruit, Nut-355, Livestock-281	Fall-1511	Strain-753 Cut-224 Fracture-195	Back-362 Ankle-263
	1971	Sept-178, Aug-171, Oct-161	Field Crop-492 Fruit, Nut-336 Livestock-249	Fall-1422	Strain-717	Back-336 Ankle-260
	1972	July-177, Aug-175 Oct-166	Field Crop-500 Fruit, Nut-314 Livestock-250	Fall-1487	Strain-798	Back-384 Ankle-273
	1973	July-283, Oct-258	Fruit, Nut-703 Field Crop-643	Fall-2319	Strain-1092 Fracture-301	Back-[illegible] Ankle-335
	1974-a	Sept-297, Aug-286 May-273	Field Crop-623 Fruit, Nut-572	Fall-1942	Strain-948 Bruise-318	Back-444 Ankle-275
	1975-b	June-253, May-252	Field Crop-224 Fruit, Nut-170	Fall-660	Strain-320 Bruise-103	Back-169 Ankle-84
Tools	1970	March-137, June-123 Jan-131	Field Crop-476 Fruit, Nut-335	Struck-783, Over-exertion-384	Cut-618 Strain-385	Finger-312 Back-233
	1971	Jan-154, June-141	Field Crop-518 Fruit, Nut-332	Struck-891, Over-exertion-377	Cut-694 Strain-362	Finger-336 Back-215
	1972	Feb-147, July-139 Jan-138	Field Crop-413 Fruit, Nut-293 Vineyard-243	Struck-810, Over-exertion-376	Cut-622, Strain-373, Eye-192	Finger-324, Back-213, Eye-193
	1973	Jan-155, Oct-148 July-142	Field Crop-484 Fruit, Nut- 275 Vineyard-243	Struck-902 Overexertion-432	Cut-707 Strain-427	Finger-353 Back-238
	1974-a	Feb-165, Sept-161 Jan-157	Field Crop-460 Fruit, Nut-221 Vineyard-195	Struck-800 Overexertion-324	Cut-631 Strain-325	Finger-309 Back-192
	1975-b	June-134	Field Crop-142 Fruit, Nut-64	Struck-209 Overexertion-115	Cut-160 Strain-111	Finger-93 Back-73

California Injury: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Machines	1970	1208	3	37	85
	1971	1100	12	34	91
	1972	1052	4	33	93
	1973	1046	8	35	93
	1974-a	750	3	-	92
	1975-b	214	4	-	95
Animals	1970	1009	1	36	89
	1971	940	0	35	89
	1972	987	1	32	88
	1973	1000	2	32	89
	1974-a	786	0	-	89
	1975-b	250	0	-	88

California Injury: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Month Reported	Industry	Accident Type	Nature of Injury	Body Part Affected
Machines	1970	Sept-141, Oct-141 Aug-130	Field Crop-600 Fruit,Nut-212	Caught-373 Struck-299 Overexertion-267	Strain-332 Cut-262	Finger-292 Back-239
	1971	Oct-144,Sept-143 Aug-142	Field Crop-586 Fruit,Nut-111	Caught-402 Struck-283 Overexertion-214	Cut-285 Strain-272	Finger-285 Back-172
	1972	Oct-163,Aug-119 Sept-108	Field Crop-481 Fruit,Nut-120	Caught-379 Struck-297 Overexertion-187	Cut-279 Strain-235	Finger-285 Back-170
	1973	Sept-136,July-124 Oct-122	Field Crop-492 Fruit,Nut-102	Struck-353 Caught-352 Overexertion-198	Cut-294 Strain-256	Finger-292 Back-167
	1974-a	July-106 May-103 Sept-100	Field Crop-388 Horticultural Service-89	Caught-266 Struck-226 Overexertion-141	Cut-239 Strain-172	Finger-207 Back-108
	1975-b	June-84	Field Crop-96 Horticultural Service-34	Caught-80 Struck-66 Overexertion-43	Cut-71 Strain-48	Finger-68 Back-31
Animals	1970	June-110,Sept-110 April-100	Livestock-646 Animal Husbandry-163	Struck-481 Fall-216	Cut-281 Fracture-162 Bruise-160	Leg-129 Arm-115
	1971	Sept-94,July-93 Aug-91	Livestock-601 Animal Husbandry-162	Struck-354 Fall-247	Cut-266 Strain-156 Bruise-133	Leg-121 Arm-111
	1972	July-107,June-101 Sept-98	Livestock-606 Animal Husbandry-216	Struck-416 Fall-229	Cut-271 Fracture-159 Strain-146	Arm-122 Back-107 Leg-103
	1973	July-110,Sept-110 Oct-101	Livestock-601 Animal Husbandry-201	Struck-447 Fall-198	Cut-201 Bruise-193 Strain-	Leg-135 Arm-124
	1974-a	July-120,Sept-111 Aug-104	Livestock-435 Animal Husbandry-152	Struck-357 Fall-143	Cut-248 Bruise-162 Strain-115	Leg-95 Arm-80
	1975-b	June-108	Livestock-156 Animal Husbandry-48	Struck-103 Fall-68	Bruise-58 Cut-57 Fracture-46	Leg-33 Arm-28

California Injury: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Containers	1970	1071	1	35	96
	1971	893	0	35	91
	1972	902	0	33	88
	1973	927	0	33	91
	1974-a	759	0	-	86
	1975-b	250	0	-	87
Tractors, Non-Highway Motor Vehicles	1970	1024	14	35	91
	1971	951	13	38	96
	1972	925	17	35	96
	1973	860	17	34	96
	1974-a	659	11	-	95
	1975-b	171	2	-	98

California Injury: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Month Reported	Industry	Accident Type	Nature of Injury	Body Part Affected
Containers	1970	Sept-137, Oct-116 Aug-111	Field Crop-334 Fruit, Nut-179 Vineyard-154	Overexertion-197 Struck-805	Strain-819	Back-597
	1971	Oct-98, Nov-96 Sept-94	Field Crop-284 Fruit, Nut-138	Overexertion-664 Struck-171	Strain-662	Back-470
	1972	July-113, Oct-102	Field Crop-260 Fruit, Nut-139	Overexertion-627 Struck-152	Strain-685	Back-523
	1973	Oct-107, July-99	Field Crop-293	Overexertion-704 Struck-191	Strain-706	Back-511
	1974-a	Sept-115, Aug-101 July-96	Field Crop-257 Nursery-136	Overexertion-566 Struck-166	Strain-551	Back-365
	1975-b	June-95	Field Crop-78 Fruit, Nut-42	Overexertion-192 Struck-50	Strain-191	Back-139
Tractors, Non-Highway Motor Vehicles	1970	July-136, Sept-131 Aug-121	Field Crop-454 Fruit, Nut-259	MotorVehicle-617 Fall-194	Strain-399 Fracture-150 Bruise-147	Back-193 Leg-134
	1971	Oct-115, Aug-114 Sept-109	Field Crop-450 Fruit, Nut-198	MotorVehicle-566 Fall-195	Strain-256 Fracture-144	Back-178 Leg-131
	1972	Aug-115, July-103 Oct-102	Field Crop-419 Fruit, Nut-169	MotorVehicle-536 Fall-186	Strain-263 Bruise-144	Back-161 Leg-101
	1973	Sept-110, Aug-106	Field Crop-385 Fruit, Nut-136	MotorVehicle-555 Fall-105	Strain-249 Bruise-163	Back-136 Leg-118
	1974-a	Aug-101, July-91 Sept-90	Field Crop-369 Fruit, Nut-81	MotorVehicle-415 Struck-91	Strain-176 Bruise-134	Back-122 Leg-79
	1975-b	May-72	Field Crop-95	MotorVehicle-91 Struck-28	Strain-43 Bruise-31 Fracture-26	Back-29 Leg-28

California Injury: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Highway Motor Vehicles	1970	548	27	36	94
	1971	506	18	33	94
	1972	509	18	32	94
	1973	662	16	29	94
	1974-a	506	37	-	91
	1975-b	136	4	-	96
Ladders	1970	862	2	41	81
	1971	834	0	39	82
	1972	690	2	38	86
	1973	161	0	37	89
	1974-a	130	0	-	89
	1975-b	35	0	-	94

California Injury: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Month Reported	Industry	Accident Type	Nature of Injury	Body Part Affected
Highway Motor Vehicles	1970	July-71, Aug-62 June-59	Field Crop-221 Fruit, Nut-108	MotorVehicle-437	Fracture-95 Strain-77 Cut-76	Head-58 Multiple-57 Back-55
	1971	Aug-69, July-67 Sept-58	Field Crop-202 Fruit, Nut-93	MotorVehicle-395	Strain-76 Bruise-75 Fracture-73	Leg-65 Back-59
	1972	July-68, May-55 Aug-55	Field Crop-182 Fruit, Nut-80 Livestock-75	MotorVehicle-398	Strain-81 Fracture-76 Cut-76	Head-64 Arm-59 Back-57
	1973	Sept-87, Oct-85 July-83	Field Crop-239	MotorVehicle-517	Strain-139 Bruise-114 Cut-104	Back-86 Head-84 Arm-77
	1974-a	Sept-68, Aug-68 July-67	Field Crop-217	MotorVehicle-389	Strain-104 Bruise-98 Cut-81	Head-64 Back-63
	1975-b	June-58	Field Crop-77	MotorVehicle-96	Bruise-29 Cut-23 Fracture-23 Strain-22	Back-18 Finger-17 Head-16
Ladders	1970	July-124, Aug-103	Fruit, Nut-759	Fall-780	Strain-226 Fracture-144 Bruise-88	Back-182 Arm-145
	1971	July-115, Aug-112	Fruit, Nut-725	Fall-748	Strain-213 Fracture-123 Bruise-103	Back-195 Arm-120
	1972	July-100, May-93	Fruit, Nut-588	Fall-608	Strain-196 Fracture-87	Back-173 Arm-99
	1973	July-24, May-19 June-18	Fruit, Nut-110	Fall-81 Struck-49	Strain-77 Bruise-32	Back-40 Leg-24 Knee-21
	1974-a	Aug- 25 June-24	Fruit, Nut-100	Fall-62 Struck-33 Overexertion-30	Strain-69 Bruise-24	Back-33 Knee-15 Arm-14
	1975-b	June-18	Fruit, Nut-26	Fall-12 Overexertion-12 Struck-9	Strain-21 Bruise-5	Back-11 Finger-5

California Injury: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Wood Items	1970	476	0	40	100
	1971	434	0	39	95
	1972	435	1	35	96
	1973	465	0	31	96
	1974-a	344	0	-	94
	1975-b	116	0	-	93
Miscellaneous Vehicles	1970	343	3	35	87
	1971	292	5	30	93
	1972	316	6	32	92
	1973	362	7	34	92
	1974-a	253	3	-	91
	1975-b	70	0	-	96

California Injury: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Month Reported	Industry	Accident Type	Nature of Injury	Body Part Affected
Wood Items	1970	Feb-62, Jan-61	Fruit, Nut-290	Eye-221 Overexertion-135 Struck-105	Eye Injury-223 Strain-139	Eye-224 Back-100
	1971	Aug-46, Dec-44 Nov-43	Fruit, Nut-227	Struck-133 Overexertion-106	Eye Injury-172 Strain-117	Eye-172 Back-83
	1972	July-50, Jan-48 May-47	Fruit, Nut-224	Overexertion-140 Struck-125	Eye Injury-155 Strain-141	Eye-155 Back-91
	1973	July-49, Jan-45	Fruit, Nut-199 Horticultural Service-75	Struck-183 Overexertion-138	Strain-144 Eye Injury-135 Cut-72	Eye-135 Back-97
	1974-a	Jan-54, Aug-46	Fruit, Nut-119 Horticultural Service-78	Struck-144 Overexertion-105	Strain-110 Eye Injury-94 Cut-54	Eye-94 Back-74
	1975-b	May-44, April-42	Fruit, Nut-48 Field Crop-20	Struck-44 Overexertion-30	Eye Injury-39 Strain-32 Cut-20	Eye-39 Back-22
Miscellaneous Vehicles	1970	Sept-45, Oct-45	Field Crop-93 Fruit, Nut-55	Struck-131 Overexertion-98 Fall-72	Strain-124 Bruise-42 Fracture-42	Back-80 Foot-37
	1971	Oct-49, Sept-37	Field Crop-100	Struck-120 Overexertion-77	Strain-95 Bruise-49	Back-66 Foot-43
	1972	Sept-49, Oct-33	Field Crop-113	Struck-132 Overexertion-85	Strain-107 Fracture-45	Back-70 Foot-40
	1973	Oct-58, Sept-44	Field Crop-101 Vineyard-56	Struck-182 Overexertion-95	Strain-114 Bruise-73	Back-73 Foot-46 Leg-41
	1974-a	Sept-45, Aug-33 July-32	Field Crop-78	Struck-125 Overexertion-65	Strain-82 Bruise-46	Back-53 Finger-37 Foot-37
	1975-b	May-27	Field Crop-27	Struck-36 Overexertion-15	Bruise-25 Strain-24	Back-16 Finger-10 Foot-9

California Injury: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Pipe	1970	318	4	35	100
	1971	303	0	32.5	97
	1972	295	0	32	98
	1973	307	2	32	98
	1974-a	278	3	-	97
	1975-b	100	4	-	98
Injurious Substances	1970	301	0	31.5	92
	1971	271	0	36	93
	1972	295	0	26.5	93
	1973	308	0	31	89
	1974-a	290	0	-	87
	1975-b	96	0	-	88

California Injury: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Month Reported	Industry	Accident Type	Nature of Injury	Body Part Affected
Pipe	1970	April-41, Aug-40 June-38	Field Crop-177 Fruit, Nut-57	Overexertion-186 Struck-83	Strain-190	Back-134
	1971	July-42 March-34	Field Crop-194 Fruit, Nut-42	Overexertion-174 Struck-91	Strain-180	Back-119
	1972	Aug-37, June-35 July-33	Field Crop-169	Overexertion-166 Struck-92	Strain-168	Back-113
	1973	July-50, May-36 June-32	Field Crop-187	Overexertion-178 Struck-104	Strain-132	Back-100
	1974-a	July-49, Aug-46	Field Crop-201	Overexertion-150 Struck-92	Strain-139 Cut-60	Back-95
	1975-b	April-35, May-35	Field Crop-78	Overexertion-57 Struck-34	Stain-52 Cut-17	Back-31
Injurious Substances	1970	July-48, Sept-39 June-38	Field Crop-83 Fruit, Nut-71 Pest Control-66	ToxicContact-248	Poisoning-127 SkinDisease-97	Multiple-133 Eye-53
	1971	Aug-42, July-35 Sept-32	Pest Control-76 Field Crop-75 Fruit, Nut-49	ToxicContact-226	SkinDisease-109 Poisoning-90 EyeInjury-44	Multiple-108 Eye-44
	1972	May-44, July-38 June-37	Pest Control-89 Field Crop-84 Fruit, Nut-56	ToxicContact-242	Poisoning-141 SkinDisease-69 EyeInjury-53	Multiple-138 Eye-53
	1973	June-41, July-41 May-39	Pest Control-88 Field Crop-85 Fruit, Nut-50	ToxicContact-258	Poisoning-114 SkinDisease-100 EyeInjury-46	Multiple-93 Eye-46
	1974-a	May-44, Sept-43 Aug-41	Field Crop-114 Pest Control-44	ToxicContact-227	SkinDisease-109 Poisoning-79 EyeInjury-59	Multiple-84 Eye-59
	1975-b	June-44	Field Crop-33 Pest Control-23	ToxicContact-82	Poisoning-39 SkinDisease-32	Multiple-44 Eye-12

California Injury: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Thorns, Brush	1970	228	0	40	76
	1971	246	0	37	82
	1972	243	0	33.5	86
	1973	253	0	34.5	80
	1974-a	193	0	-	83
	1975-b	46	0	-	80
Elevators, Hoists, Conveyors	1970	171	0	30	96
	1971	151	1	31	80
	1972	150	1	27	85
	1973	166	0	30	80
	1974-a	120	0	-	78
	1975-b	37	0	-	86

California Injury: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Month Reported	Industry	Accident Type	Nature of Injury	Body Part Affected
Thorns, Brush	1970	Jan-36, Feb-33	Fruit, Nut-85	Struck-100	Cut-89	Eye-83
		Dec-24	Vineyards-81	Eyelnjury-75	Eyelnjury-83	Finger-33
				Overexertion-24	Strain-43	
	1971	Sept-31, Jan-30	Vineyards-86	Struck-104	Cut-99	Eye-74
		Oct-29	Fruit, Nut-85	Explosion-74	Eyelnjury-74	Finger-38
				Overexertion-62	Strain-57	Back-28
	1972	Jan-39, Feb-28	Vineyard-98	Struck-83	Eyelnjury-84	Eye-84
			Fruit, Nut-71	Explosion-83	Cut-72	Back-44
				Overexertion-71	Strain-68	Finger-37
	1973	Jan-36, Feb-29	Vineyard-92	Struck-96	Eyelnjury-85	Eye-85
		July-26	Fruit, Nut-75	Explosion-83	Cut-83	Back-46
				Overexertion-47	Strain-69	
	1974-a	Feb-31, July-27	Vineyard-57	Struck-71	Cut-64	Eye-56
		Jan-25	Fruit, Nut-52	Overexertion-64	Strain-60	Back-41
			Nursery-31	Explosion-55	Eyelnjury-56	Finger-22
	1975-b	June-22	Fruit, Nut-17	Struck-22	Cut-21	Finger-12
			Vineyard-11	Overexertion-13	Strain-13	Eye-11
			Field Crop-8	Explosion-11	Eyelnjury-11	
Elevators, Hoists, Conveyors	1970	April-23, Sept-23	Field Crop-55	Caught-84	Cut-54	Finger-57
		Oct-23	Fruit, Nut-26	Struck-55	Strain-33	Arm-24
	1971	Aug-23, Oct-20	Field Crop-69	Caught-80	Cut-50	Finger-41
				Struck-42	Strain-26	Hand-21
	1972	July-24, Oct-24	Field Crop-54	Caught-77	Strain-34	Finger-35
		Aug-19		Struck-30	Cut-32	Hand-20
					Fracture-22	Back-20
	1973	July-23, Sept-22	Field Crop-70	Caught-85	Cut-46	Finger-51
		Nov-19		Struck-47	Strain-35	Hand-22
	1974-a	Sept-21, July-19	Field Crop-47	Caught-65	Cut-32	Finger-43
		May-16	Ag Services-20	Struck-31	Strain-26	Hand-15
					Fracture-18	Back-14
					Bruise-18	
	1975-b	June-20	Field Crop-20	Caught-19	Bruise-17	Finger-13
				Struck-14		

California Injury: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Poisonous Plants	1970	111	0	30	89
	1971	104	0	27	83
	1972	129	0	30	87
	1973	117	0	24.5	90
	1974-a	137	0	-	85
	1975-b	33	0	-	88
Flying Particles	1970	120	0	40	75
	1971	118	0	38	96
	1972	99	0	34	91
	1973	130	0	36.5	90
	1974-a	119	0	-	95
	1975-b	44	0	-	95

California Injury: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Month Reported	Industry	Accident Type	Nature of Injury	Body Part Affected
Poisonous Plants	1970	Oct-13, March-12	Fruit,Nut-34 Field Crop-25 Horticultural Svc-17	ToxicContact-110	SkinDisease-110	Multiple-44 Arm-18
	1971	Nov-17,June-16 Aug-16	Fruit,Nut-27 Field Crop-26 Horticultural Svc=26	ToxicContact-104	SkinDisease-105	Multiple-59
	1972	July-24,Jan-15 June-14	Fruit,Nut-42 Horticultural Svc-28 Field Crop-22	ToxicContact-129	SkinDisease-129	Multiple-72
	1973	July-18 June-15	Horticulural Svc-36 Fruit,Nut-35	ToxicContact-115	SkinDisease-110	Multiple-60 Arm-25
	1974-a	Aug-23,July-21	Fruit,Nut-34 Field Crop-33 Horticultural Svc-28	ToxicContact-137	SkinDisease-136	Multiple-71
	1975-b	May-12	Fruit,Nut-15	ToxicContact-33	SkinDisease-32	Multiple-19
Flying Particles	1970	March-22 April-16,June-14	Field Crop-57 Fruit,Nut-30	Eye Injury-120	EyeInjury-120	Eye-120
	1971	Aug-16,Sept-15	Field Crop-61 Fruit,Nut-27	Explosion-117	EyeInjury-117	Eye-117
	1972	Oct-14,Nov-14	Field Crop-39 Fruit,Nut-21	Explosion-99	Eye Injury-99	Eye-99
	1973	Aug-21,Oct-16 Sept-15	Field Crop-50	Explosion-130	EyeInjury-128	Eye-128
	1974-a	Aug-23,Sept-21 May-16	Field Crop-56	Explosion-119	EyeInjury-119	Eye-119
	1975-b	June-19	Field Crop-21 Fruit,Nut-8	Explosion-44	EyeInjury-44	Eye-44

California Injury: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Pressure, Motion	1970	96	0	40.5	83
	1971	87	0	42	83
	1972	105	0	39.5	84
	1973	128	0	39	80
	1974-a	95	0	-	75
	1975-b	18	0	-	72
Chemicals	1970	83	1	25.5	100
	1971	85	1	32.5	92
	1972	90	1	30	99
	1973	121	2	28	98
	1974-a	105	2	0	91
	1975-b	38	1	-	95

California Injury: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Month Reported	Industry	Accident Type	Nature of Injury	Body Part Affected
Pressure, Motion	1970	Aug-14, Jan-13 Sept-12	Fruit, Nut-35 Field Crop-32	Overexertion-95	Strain-92	Back-51 Arm-15
	1971	June-15, Oct-13 May-11	Field Crop-30 Fruit, Nut-30	Overexertion-87	Strain-83	Back-43
	1972	March-14, June-12 July-12	Fruit, Nut-40 Field Crop-30	Overexertion-102	Strain-96	Back-48
	1973	June-17, May-16 Sept-16	Field Crop-42 Fruit, Nut-48	Overexertion-127	Strain-114	Back-60
	1974-a	Sept-19, July-14 June-13	Field Crop-33 Fruit, Nut-18	Overexertion-94	Strain-98	Back-42 Knee-15
	1975-b	June-8	Field Crop-11	Overexertion-18	Strain-15	Back-10
Chemicals	1970	April-15 June-11 May-9, July-9	Field Crop-41 Fruit, Nut-13	ToxicContact-44 Eye Injury-18 Explosion-13	Burn-39 Poisoning-14 EyeInjury-18	Eye-19 Multiple-18
	1971	July-13, Nov. 11 June-9	Field Crop-33 PestControl-13 Fruit, Nut-10	ToxicContact-44 Explosion-27 Temp Contact-14	Burn-35 EyeInjury-25 Poisoning-15	Eye-25 Multiple-19 Hand-14
	1972	Sept-12, July-11	Field Crop-28 PestControl-20	ToxicContact-52 Explosion-31	Burn-52 EyeInjury-25 Poisoning-20	Eye-25 Multiple-20
	1973	May-15, Aug-14 Oct-14	Field Crop-41 PestControl-29	ToxicContact-73 Explosion-40	Burn-40 EyeInjury-36 Poisoning-22	Eye-36 Multiple-21
	1974-a	July-18, May-17 Aug-15	Field Crop-46	ToxicContact-53 Explosion-42	EyeInjury-38 Burn-35 Poisoning-16	Eye-38 Multiple-19
	1975-b	June-16	Field Crop-21	ToxicContact-20 Explosion-16	EyeInjury-15 Burn-13	Eye-15

California Injury: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Other	1970	1215	11		
	1971	1412	7		
	1972	1340	9		
	1973	1716	10		
	1974-a	1459	4		
	1975-b	481	3		
All Causes	1970	12,449	74	36	88
	1971	11,881	59	35	91
	1972	11,697	62	33.5	91
	1973	12,739	66	33	90
	1974-a	10,394	67	-	89
	1975-b	3,199	19	-	90

California Injury: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Month Reported	Industry	Accident Type	Nature of Injury	Body Part Affected
Other	1970	-	-	-	-	-
	1971	-	-	-	-	-
	1972	-	-	-	-	-
	1973	-	-	-	-	-
	1974-a	-	-	-	-	-
	1975-b	-	-	-	-	-
All Causes	1970	Sept-1278	Field Crop-3763	Fall-3120	Strain-4006	Back-2621
		Aug-1266	Fruit,Nut-3154	Struck-2982	Cut-2155	Finger-1168
		July-1240	Livestock-1738	Overexertion-2562	Fracture-1107	Arm-994
					Bruise-1036	Eye-902
	1971	Aug-1318	Field Crop-3792	Fall-3004	Strain-3719	Back-2377
		Sept-1219	Fruit,Nut-2749	Struck-2964	Cut-2214	Finger-1163
		Oct-1189	Livestock-1592	Overexertion-2354	Fracture-1016	Arm-903
					Bruise-981	Eye-828
	1972	July-1305	Field Crop-3364	Fall-2898	Strain-3825	Back-2467
		Aug-1167	Fruit,Nut-2475	Struck-2888	Cut-2048	Finger-1126
		Oct-1147	Livestock-1663	Overexertion-2407	Fracture-975	Arm-923
					Bruise-957	Eye-804
	1973	July-1458	Field Crop-3815	Struck-3443	Strain-4289	Back-2554
		Sept-1348	Fruit,Nut-2296	Fall-2926	Cut-2364	Finger-1285
		Oct-1336	Livestock-1682	Overexertion-2631	Bruise-1377	Arm-981
					Fracture-1046	Eye-841
	1974-a	Sept-1477	Field Crop-3645	Struck-2819	Strain-3455	Back-2027
		Aug-1393	Fruit,Nut-1707	Fall-2372	Cut-2032	Finger-1031
		July-1348	Livestock-1247	Overexertion-2088	Bruise-1188	Eye-753,Arm-739
	1975-b	June-1204	Field Crop-1179	Struck-823	Strain-1112	Back-691
			Fruit,Nut-525	Fall-799	Cut-568	Finger-365
			Livestock-406	Overexertion-688	Bruise-408	Arm-254

a - 1974 data is for the 1st 9 months only

b - 1975 data is for the 2nd quarter only

NEW JERSEY

Accident and Employment Data

Employment Statistics*	1973	1974
Total Farm Workers	19,000	18,000
Hired Farm Workers	10,000	9,000

Worker's Compensation Coverage	1973	1974
Number of Workers Covered+	Not Provided	10,000
Type of Coverage	Compulsory for all workers receiving wages	

Accident Cases Reported	1973	1974
Number of Accident Cases	706 (Estimated)	809 (Estimated)
Type of Accident Cases	All illnesses (54% Lost Time) plus all lost time injuries (25% of all cases for workers over 18 and 100% of cases for workers under 18).	

* - USDA Statistical Reporting Service

+ - New Jersey Dept. of Labor and Industry.

New Jersey Data Analysis

Summaries of reported variables are given by cause of accident and year of accident. The number of cases provided was 228 for 1973 and 256 for 1974. These represent 25% of all lost time injuries to workers over 18 years of age, 25% of all occupational illness reports (both lost time and no lost time) for workers over 18, and 100% of all injury and illness cases to workers under 18. There were 32 cases each year involving workers under 18 which were classified as non lost time injuries or non illness cases, and these were not analyzed since they were not comparable to the rest of the cases. Counting all illness and lost time injuries to minors and multiplying the illness and lost time injuries to workers over 18 by the sample factor of four, the estimates of the number of illness and lost time injury cases in 1973 and 1974 were 706 and 809 respectively. Table 9 presents a definition of variables and an indexed set of tabulations giving the estimates of the number of accidents and fatalities, the number of occupational illnesses included in the number of accidents plus the percent lost time illness cases, the median age of the workers, and the percent of workers who are male. Also given are the most commonly occurring categories and corresponding estimated number of cases for nature of accident, accident type, body part affected, month of accident, and industry of the worker.

The number of reported accidents increased from 1973 to 1974 and the number of fatalities decreased by one actual case (four estimated cases). Working surfaces, hand and power tools, vehicles, poisonous plants, and containers accounted for the majority of accidents. The number of accidents due to working surfaces and vehicles more than doubled from 1973 to 1974. The accident cause with the most fatalities was bodily motion. Occupational illnesses were mostly due to poisonous plants. Power tools and machines injured younger workers and working surfaces and bodily motion injured older workers. Ninety-two percent of all accidents occurred to males.

The most common accident natures were cuts, strains or sprains, and fractures. Falls, struck by objects and struck against objects were the usual accident type. Multiple body part injuries plus finger and back injuries were most common with respect to body part. August and July were the most hazardous months for accidents. Workers in horticultural services experienced the most accidents.

Using the USDA estimates of the number of hired farm workers, the accident rates were 71 and 90 accidents per 1,000 workers for 1973 and 1974. Dividing these rates among injuries and illnesses the rates are 61 and 75 injuries per 1,000 workers and 10 and 15 illnesses per 1,000 workers for 1973 and 1974 respectively.

The Department of Labor and Industry reports for 1974 that there were about 10,000 hired workers in 1974 of which about 7,000 were employed in SIC code 07 (Agricultural Services). This leaves about 3,000 workers in SIC code 01 (Agricultural Production). Accident rates would then be 59 accidents per 1,000 workers for code 07 and 132 accidents per 1,000 workers for code 01.

Table 9. New Jersey Case Data Tabulations

Note: A description of some of the variables used in the tabulations is given below. On the next page is an index that allows the reader to find statistics for a particular accident cause. To see all statistics for a given accident cause, be sure to look at both pages shown in the index.

Description of Variables

Accident Nature

- Strain - Sprains, strains
- Bruise - Contusion, crushing, bruise - intact skin surface
- Cut - Cut, laceration, puncture - open wound
- Dermatoses - Contact dermatitis, oil acne, rash chrome ulcers, skin tumors, skin cancers, inflammation, changed pigmentation, etc.
- Cardiac - Cardiac cases, heart diseases, heart attacks such as coronary insufficiency, coronary thrombosis, myocardial infarction, etc.

Accident Type

- Fall - Fall from elevation, or fall on same level
- Struck - Struck by, against (falling, flying, moving, stationary objects)
- Caught - Caught in, under, or between (inrunning or meshing objects, collapsing materials)
- Overexertion - Overexertion in lifting, pulling, pushing, wielding or throwing objects
- Toxic Contact - Contact with radiations, caustics, toxic and noxious substances by inhalation, injestion, absorption
- Other - Accident type not elsewhere classified

Industry

- General Farms - Crop and livestock farms combined, general farms
- Horticultural Services - Establishments engaged in the production of growing horticultural specialty crops, such as bulbs, florists' greens, herbs, mushrooms, vegetables, flower seeds and sod crops
- Vegetable Farms - Establishments engaged in the production of vegetables.
- Animal Husbandry - Animal husbandry services, offices of veterinarians and animal hospitals
- Fruit, Nut - Fruits and tree nut, establishments engaged in the production of fruits and tree nuts

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New Jersey: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	No. of Occupational Illnesses	% Occupational Illnesses with Lost Time	Median Age	% Males
Working Surfaces	1973	93	0	0	-	36	100
	1974	213	0	0	-	30	86
Power Tools	1973	65	0	0	-	23	100
	1974	62	0	0	-	26	100
Vehicles	1973	40	4	0	-	26.5	83
	1974	82	0	0	-	30	93
Poisonous Plants	1973	48	0	48	58	30	83
	1974	72	0	72	39	22.5	94

New Jersey: Most Common Categories -- No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry
Working Surfaces	1973	Strain-36 Fracture-28	Fall-89	Ankle-16 Multiple-13 Leg-12	Aug-25	General Farm-32 Horticultural Services-28
	1974	Fracture-110 Bruise-41 Strain-36	Fall-213	Leg-32 Ankle-29	July-59 Aug-32	Vegetable Farm-60 Horticultural Services-58
Power Tools	1973	Cut-45	Struck on-33 Caught-20	Finger-28 Leg-12 Toe-12	July-16	Horticultural Services-56
	1974	Cut-54	Struck on-50	Finger-14 Arm-12	Aug-20 Sept-12	Horticultural Services-54
Vehicles	1973	Fracture-14	Struck by-13	Head-8 Arm-8 Hand-8	Nov-12	Horticultural Specialties-12
	1974	Fracture-28 Strain-20	Caught-26 Struck by-12 Overexertion-12	Foot-21 Toe-12	Aug-20 May-17	Vegetable Farm-23 Animal Husbandry-18 Horticultural Services-16
Poisonous Plants	1973	Dermatosis-48	Toxic Contact-48	Multiple-40	Aug-12	Horticultural Services-24 Horticultural Specialties-16
	1974	Dermatosis-72	Toxic Contact-72	Multiple-56	July-20 June-16 May-12	Horticultural Services-48

New Jersey: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	No. of Occupational Illnesses	% Occupational Illnesses with Lost Time	Median Age	% Males
Containers	1973	51	0	0	-	34	84
	1974	59	0	0	-	28	98
Hand Tools	1973	61	4	1	100	30	98
	1974	47	0	0	-	25	83
Body Motion	1973	49	4	4	0	30	84
	1974	40	8	20	60	45.5	90
Animals	1973	46	0	12	67	30	74
	1974	37	0	8	100	22	68

New Jersey: [illegible] Common [illegible]gories -- No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry
Containers	1973	Strain-24 Bruise-13	Overexertion-32	Back-28	Aug-14 July-12	Animal Husbandry-12 General Farm-9
	1974	Strain-44	Overexertion-44	Back-32	[illegible]-13 [illegible]-12 [illegible]-12	Vegetable Farm-15 Horticultural Services-12
Hand Tools	1973	Cut-56	Struck on-46	Finger-26	Nov-16 Sept-12 June-10	Fruit, Nut Farm-20 Horticultural Specialties-13
	1974	Cut-35	Struck on-39	Finger-14	Aug-13 May-8	General Farm-14 Horticultural Services-9
Body Motion	1973	Strain-37	Body Reaction-49	Ankle-17	March-8 July-8 Sept-8 Dec-8	Horticultural Services-13 Animal Husbandry-12
	1974	Strain-20 Cardiac-20	Body Reaction-40	Chest-20 Back-16	Aug-8 Sept-8 Nov-8	Horticultural Services-12
Animals	1973	Cut-21	Other-33	Hand-12 Arm-9 Multiple-8	Aug-12	Animal Husbandry-12
	1974	Fracture-12 Cut-9	Other-21	Arm-8 Chest-8	Aug-13	Animal Husbandry-12 Horticultural Services-12

New Jersey: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	No. of Occupational Illnesses	% Occupational Illnesses with Lost Time	Median Age	% Males
Metal Items	1973	44	0	0	-	35	91
	1974	29	0	0	-	27	100
Non-Poisonous Plants	1973	34	0	0	-	30	100
	1974	34	0	4	0	21	100
Wood Items	1973	41	0	0	-	27	100
	1974	20	0	0	-	23	100
Machines	1973	15	0	0	-	22	100
	1974	26	0	0	-	26	96

New Jersey: Most Common Categories -- No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry
Metal Items	1973	Cut-16 Fracture-16	Struck by-28	Eye-8 Finger-8 Foot-8 Toe-8	July-12 Oct-12	Horticultural Services-32
	1974	Cut-29	Struck by-21	Ankle-8	Nov-12 April-8	Horticultural Services-12
Non-Poisonous Plants	1973	Scratch-14 Cut-12	Struck by-17	Eye-26	March-8	Horticultural Services-14 Horticultural Specialties-12
	1974	Strain-9 Bruise-9	Overexertion -17 Struck by-13	Head-8 Back-8	March-12 Aug-12	Horticultural Services-29 Horticultural Specialties-13
Wood Items	1973	Bruise-16 Cut-9	Struck by-24	Back-12 Hand-8	March-8	Horticultural Services-28
	1974	*	Struck by-12	*	Dec-8	Horticultural Services-20
Machines	1973	Cut-8	Caught-10	Finger-10	Aug-5	Horticultural Services-5
	1974	Cut-17	Caught-14	Finger-17	July-6	Horticultural Services-12

New Jersey: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	No. of Occupational Illnesses	% Occupational Illnesses with Lost Time	Median Age	% Males
Other	1973	119	0	32	-	-	-
	1974	88	0	32	-	-	-
All Causes	1973	706	12	97	55	30	93
	1974	809	8	136	53	29	91

New Jersey: Most Common Categories -- No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry
Other	1973	-	-	-	-	-
	1974	-	-	-	-	-
All Causes	1973	Cut-193 Strain-128 Fracture-96	Struck by-155 Struck on-126 Fall-105	Finger-95 Multiple-94	Aug-127 July-95 Sept-89	Horticultural Services-247 Fruit, Nut Farm-86
	1974	Fracture-180 Cut-172 Strain-161	Fall-222 Struck on-133	Multiple-102 Back-100	Aug-149 July-12 May-98	Horticultural Services-320 Vegetable Farm-145

*There is no category with more than one sample case (4 estimated cases).

NEW YORK

Accident and Employment Data

Employment Statistics*	1972	1973
Total Farm Workers	95,000	99,000
Hired Farm Workers	25,000	29,000

Workmen's Compensation Coverage	1972	1973
Number of Workers Covered+	Not Provided	20,000
Type of Coverage	Compulsory if employer's wage payments during the preceding calendar year amounts to $1,200 or more.	

Accident Cases Reported	1972	1973
Number of Accident Cases	1,251	1,185
Type of Accident Cases	Injury and illness (88% lost time)	

* - USDA Statistical Reporting Service

+ - N. Y. Workmen's Compensation Board

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New York Data Analysis

Summaries of reported variables are given by accident cause and by year reported. Table 10 presents a definition of variables and an indexed set of tabulations giving the number of accidents and fatalities, percent of accidents with lost time, median weeks of lost time, median age of the workers, and percent of the workers who are males. Also given are the most commonly occurring accident nature, accident type, body part affected. month of accident, industry and occupation of the worker plus the number of cases in these selected categories.

The number of reported cases decreased slightly from 1972 to 1973 and the number of fatalities was reduced by more than one-half. The most accidents were caused by farm and garden machines, animals, motor vehicles and tractors, working surfaces, and wood items. Containers, chemicals and explosives, and all types of working surfaces caused the highest proportions of lost time accidents and the most lost time. Fatalities were mostly caused by tractors, motor and non-motor vehicles, and working surfaces. Younger workers were injured by tractors, motor vehicles, hand tools and animals while the older workers were injured by working surfaces. Ninety-three percent of all accidents occurred to males.

Fractures, cuts, and strains were the most common accident nature and falls, slips, and being struck by objects were the most common accident types. Fingers, backs, abdomens, and multiple parts were the parts of the body usually affected. July had the most accidents, closely followed by September and October. Accidents usually occurred to farmers and laborers on farms and to gardeners and workers in agricultural services.

Using the USDA estimates of the number of hired workers in New York in 1972 and 1973, the accident rates for reported accidents were 50 and 41 accidents per 1,000 workers per year for 1972 and 1973, respectively.

Table 10. New York Case Data Tabulations

Note: A description of some of the variables used in the tabulations is given below. On the next page is an index that allows the reader to find statistics for a particular accident cause. To see all statistics for a given accident cause, be sure to look at both pages shown in the index.

Description of Variables

Accident Nature

- Cut - Cuts, punctures, lacerations, abrasions
- Bruise - Bruises, contusions
- Strain - Strains, sprains
- Inhale, Ingest, Absorb - Inhalation, ingestion, and absorbtion of toxic substances

Accident Type

- Caught - Caught in, on or between
- Struck On - Striking against objects
- Struck By - Struck by (falling, flying, sliding, or moving objects)
- Fall - Fall on same level and fall to different level
- Slip - Slip (not fall) or overexertion (resulting in strain, hernia, etc.)
- Contact - Contact with toxic substances

Industry

- Farms - Field crops, fruits, tree nuts, vegetables, livestock, general farms
- Ag Services - Agricultural services except animal husbandry and horticultural services.
- Horticultural Specialties - Establishments engaged in the production of growing horticultural specialty crops, such as bulbs, florists' greens, herbs, mushrooms, vegetables, flower seeds

Occupation

- Farmer - Farms, farm laborers
- Gardener - Gardeners (except farm) and groundkeepers, forestry and fishery workers, nursery and landscaping workers, stablemen, etc.

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New York: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	% with Lost Time	Median Weeks Lost Time	Median Age	% Males
Farm and Garden Machines	1972	98	1	81	4	34	99
	1973	119	1	81	4	32	98
Animals	1972	109	0	88	3	32.5	89
	1973	97	0	87	4	29	85
Motor Vehicles	1972	86	4	90	4	30.5	95
	1973	105	0	94	4	31	96
Tractors	1972	91	3	89	3	31	99
	1973	88	4	86	4	32.5	98

New York: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry	Occupation
Farm and Garden Machines	1972	Cut-38 Fracture-29	Caught-67	Finger-57	Sept-18 Oct-17	Farms-60 Ag Services-35	Farmer-56 Gardener-34
	1973	Cut-53 Fracture-24 Amputation-22	Caught-82	Finger-62	Sept-18 May-16 July-16	Farms-70 Ag Services-40	Farmer-65 Gardener-47
Animals	1972	Fracture-33 Bruise-27	Struck by-87	Abdomen-17 Leg-13	Sept-15 Oct-15	Farms-72 Ag Services-37	Farmer-62 Gardener-27
	1973	Fracture-32 Other-21 Strain-18	Struck by-75	Face-13 Finger-11 Arm-10	June-13 March-13 Jan-13	Farms-70 Ag Services-26	Farmer-65 Gardener-20
Motor Vehicles	1972	Fracture-28 Strain-21	Fall-31 Struck by-21	Multiple-13 Finger-11 Back-11	Sept-13 May-13 July-12	Ag Services-50 Farms-30	Gardener-41 Farmer-25
	1973	Fracture-36 Strain-29	Fall-32 Slip-23	Multiple-28 Finger-11 Back-11	Aug-13 June-12 July-12	Ag Services-53 Farms-48	Farmer-39 Gardener-37
Tractors	1972	Fracture-39 Cut-19	Struck by-27 Fall-23 Caught-18	Leg-14 Ankle-11 Multiple-10	July-17 Oct-12 May-11	Farms-87	Farmer-84
	1973	Fracture-33 Strain-18 Cut-16	Fall-25 Caught-16 Struck by-16	Multiple-20 Finger-10	July-18 Aug-13 Sept-11	Farms-77	Farmer-72

New York: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	% with Lost Time	Median Weeks Lost Time	Median Age	% Males
Outside Surfaces	1972	88	1	93	5	35	91
	1973	84	0	94	4	37	90
Wood Items	1972	87	2	86	5	37	97
	1973	65	1	91	3	33	95
Portable Object Surfaces	1972	75	1	97	6	38	84
	1973	73	1	93	6	41.5	86
Containers and Packed Material	1972	68	1	97	7	40.5	91
	1973	67	1	99	5	31	96

New York: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry	Occupation
Outside Surfaces	1972	Strain-32 Fracture-29	Fall-64 Slip-24	Knee-15 Ankle-14 Back-13	Sept-10 May-10 Jan-10	Farms-54 Ag Services-26	Farmer-44 Gardener-26
	1973	Strain-35 Fracture-27	Fall-51 Slip-31	Ankle-20	Sept-12 Oct-11 July-10	Farms-50 Ag Services-28	Farmer-46 Gardener-22
Wood Items	1972	Strain-22 Fracture-21 Cut-20	Slip-36 Struck by-31	Abdomen-18 Back-17 Finger-14	June-12 May-11 Dec-11	Ag Services-53 Farms-24	Gardener-56 Farmer-21
	1973	Strain-25 Cut-14	Slip-33 Struck by-27	Back-19 Abdomen-9	April-10 May-10	Ag Services-45	Gardener-45
Portable Object Surfaces	1972	Fracture-40 Strain-19	Fall-70	Back-17 Multiple-13	Oct-25 July-13	Farms-64	Farmer-62
	1973	Fracture-40	Fall-67	Multiple-13 Back-10 Arm-9	Oct-18 Sept-17 July-13	Farms-66	Farmer-63
Containers and Packed Material	1972	Strain-25 Hernia-17	Slip-45	Back-27 Abdomen-18	Oct-12 July-8 Nov-7	Farms-52	Farmer-45
	1973	Strain-31 Hernia-18	Slip-52	Back-29 Abdomen-19	July-9 Aug-9 Sept-8	Farms-43 Ag Services-18	Farmer-36 Gardener-17

New York: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	% with Lost Time	Median Weeks Lost Time	Median Age	% Males
Hand Tools	1972	72	0	85	3	30	96
	1973	62	2	73	2	30	97
Power Tools	1972	60	0	85	3	26.5	98
	1973	63	1	84	3	37	98
Metal Items	1972	35	1	91	2	27	94
	1973	44	0	84	3	39	98
Aids to Work	1972	38	1	84	3	33	97
	1973	36	0	89	3	33.5	100

New York: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry	Occupation
Hand Tools	1972	Cut-35 Strain-17	Struck by-39 Slip-25	Finger-18 Back-12	July-11 May-11 Sept-8	Farms-41 Ag Services-25	Farmer-35 Gardener-23
	1973	Cut-33	Struck by-41	Finger-14 Face-10	Aug-10 June-9 May-7	Farms-32 Ag Services-27	Farmer-29 Gardener-19
Power Tools	1972	Cut-38	Struck by-50	Finger-17 Leg-10	Nov-11 Aug-9	Ag Services-42	Gardener-34 Farmer-14
	1973	Cut-34	Struck by-47	Finger-17 Back-8	July-11 June-10	Ag Services-48	Gardener-34
Metal Items	1972	Cut-16 Fracture-8	Struck on-15 Struck by-12	Finger-9	Aug-6 Sept-6 July-5	Farms-26	Farmer-25
	1973	Cut-18	Struck by-20 Slip-13 Struck on-10	Finger-9 Abdomen-7	Sept-7 May-7 April-6	Farms-24 Ag Services-13	Farmer-19 Gardener-14
Aids to Work	1972	Strain-16 Cut-9	Slip-21 Struck by-14	Back-11 Abdomen-6	Aug-6 Jan-5 March-5 April-5	Farms-22 Ag Services-13	Farmer-20 Gardener-12
	1973	Strain-15	Slip-19 Struck by-10	Back-10 Abdomen-6	Oct-8 June-7 April-7	Farm-19 Ag Services-14	Farmer-18 Gardener-15

New York: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	% with Lost Time	Median Weeks Lost Time	Median Age	% Males
Fixed Object Surfaces	1972	39	3	97	7	28	87
	1973	33	1	100	8	37	97
Inside Surfaces	1972	35	0	100	6	37	83
	1973	34	0	91	4	32	68
Non-Motor Vehicles	1972	30	3	87	3	32	97
	1973	23	0	100	7	42	100
Conveyors	1972	30	1	77	2	23	100
	1973	22	0	86	4	33	95

New York: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry	Occupation
Fixed Object Surfaces	1972	Fracture-19 Strain-8	Fall-37	Back-10 Multiple-8	July-6 Aug-5 Sept-5	Farms-21 Ag Services-16	Farmer-21 Gardener-15
	1973	Fracture-15 Strain-8	Fall-28	Abdomen-6 Multiple-5	July-7 Oct-6	Farms-28	Farmer-26
Inside Surfaces	1972	Fracture-13 Strain-9	Fall-30	Back-6 Knee-5 Multiple-5	Nov-6 June-5	Farms-29	Farmer-27
	1973	Strain-15 Fracture-9	Fall-23	Knee-10	June-5 Dec-5	Farms-22	Farmer-22
Non-Motor Vehicles	1972	Fracture-9 Cut-6	Struck by-13 Slip-9	Back-5 Abdomen-4	June-6 Sept-6	Farms-18 Ag Services-8	Farmer-15 Gardener-10
	1973	Fracture-10 Strain-5 Hernia-5	Slip-10 Struck by-7	Abdomen-5 Hand-3 Multiple-3	Oct-4	Farms-19	Farmer-18
Conveyors	1972	Fracture-10 Cut-8	Caught-18	Finger-13	Aug-6 Sept-6 Dec-5	Farms-29	Farmer-28
	1973	Fracture-6 Cut-5	Caught-15	Finger-8	July-5 Aug-5	Farms-20	Farmer-19

New York: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	% with Lost Time	Median Weeks Lost Time	Median Age	% Males
Chemicals, Explosives, Dusts	1972	26	1	96	2	26	88
	1973	24	0	96	2	31.5	92
Other	1972	184	6	-	-	-	-
	1973	146	2				
All Causes	1972	1,251	29	88	4	32	93
	1973	1,185	14	89	4	33	94

New York: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry	Occupation
Chemicals, Explosives, Dusts	1972	Inhale, Ingest, Absorb-23	Contact-12 Dermatitis-7 Burn-6	Multiple-6 Chest-5 Arm-5	Aug-11 July-6	Farms-13 Ag Services-7 Horticultural Specialties-6	Farmer-11 Gardener-10
	1973	Inhale, Ingest, Absorb-23	Contact-13 Dermatitis-6	Multiple-6 Chest-6 Hand-6	Aug-8 July-5	Farms-15 Ag Services-7	Farmer-13 Gardener-8
Other	1972	-	-	-	-	-	-
	1973	-	-	-	-	-	-
All Causes	1972	Fracture-356 Cut-269 Strain-255	Struck by-359 Fall-311 Slip-277	Finger-200 Back-187 Abdomen-112 Multiple-108	Sept-154 Oct-154 July-136	Farms-770 Ag Services-396	Farmer-695 Gardener-366
	1973	Fracture-324 Strain-274 Cut-251	Struck by-313 Slip-286 Fall-275	Finger-206 Back-145 Multiple-113 Abdomen-101	July-155 Sept-131 Oct-131	Farms-706 Ag Services-399	Farmer-643 Gardener-356

OHIO

Accident and Employment Data

Employment Statistics*	1973	1974
Total Farm Workers	155,000	156,000
Hired Farm Workers	19,000	19,000

Worker's Compensation Coverage	1973	1974
Number of Workers Covered	Not Provided	Not Provided
Type of Coverage	Compulsory for employers with more than three employees.	

Accident Cases Reported	1973	1974
Number of Accident Cases	618	791
Type of Accident Cases	Lost time injury and illness	

* - USDA Statistical Reporting Service

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Ohio Data Analysis

Summaries of the reported variables are given for the lost time accidents by cause of accident and by year the injury report was filed. Table 11 presents a definition of variables and an indexed set of tabulations giving the number of accidents and fatalities, median days of lost time per accident, median age of the worker, and percent of workers who are male. Also presented are the most commonly occurring accident nature, accident type, body part affected, month of accident, and occupation of the workers plus the number of occurrences of each of these categories.

The number of accidents increased from 618 to 791 and the number of fatalities increased from 5 to 9 from 1973 to 1974. Elevated surfaces, wood items, machines, and motor vehicles caused the most lost time accidents, while elevated surfaces, motor vehicles, and tractors caused the majority of fatalities. Elevated surfaces, machines, tractors, conveyors, and containers caused accidents with the most lost time. Working surfaces injured older workers while tools and conveyors injured younger workers. Ninety percent of all reported accidents occurred to males.

Strains, bruises, and cuts were the most common accident nature. Falls, slips, and being struck by objects were the most common accident types. Backs, abdomens, and fingers were the usual body part affected. The most frequent occupation of the injured worker was farmer or farmworker, and the month with the most accidents was July.

Using the USDA estimates of the number of hired farmworkers, 19,000 for 1973 and 1974, the lost time accident rates are 33 and 42 lost time accidents per 1,000 workers per year for 1973 and 1974.

Table 11. Ohio Case Data Tabulations

Note: A description of some of the variables used in the tabulations is given below. On the next page is an index that allows the reader to find statistics for a particular accident cause. To see all statistics for a given accident cause, be sure to look at both pages shown in the index.

Description of Variables

Accident Nature

- Strain - Sprains and strains (slip, lifting, pushing, prying, throwing, etc.)
- Bruise - Contusion, bruise
- Cut - Laceration, puncture, and puncture - foreign body imbedded (other than eye)

Accident Type

- Fall - Fall on same level and fall to different level
- Struck On - Striking against objects
- Struck By - Struck by (falling, flying, sliding or moving objects)
- Slip - Slip (not fall) or overexertion (resulting in strain, hernia, etc.)
- Caught - Caught in, on, or between

Occupation

- Farmer - Farmers and farm managers
- Laborer - Laborers, except farm
- Other Craftsmen - Craftsmen, foremen, operatives and kindred workers

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Ohio: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Days Lost Time	Median Age	% Males
Elevated Surfaces	1973	53	0	30	34	81
	1974	125	2	27	27	86
Wood Items	1973	68	0	13.5	29	97
	1974	71	0	14	27	96
Machines	1973	49	0	32	37	94
	1974	72	0	21.5	28.5	96
Motor Vehicles	1973	53	1	28	34	96
	1974	55	1	11	23	96

Ohio: Most Common Categories -- No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Occupation
Elevated Surfaces	1973	Fracture-19 Strain-14 Bruise-10	Fall-47	Back-13 Abdomen-10 Wrist-8	Nov-12 Sept-9 Aug-9	Farmer-26
	1974	Bruise-48 Fracture-39 Strain-30	Fall-122	Abdomen-27 Back-24 Leg-14	July-28 Oct-17	Farmer-59 Laborer-26 Other Craftsman-22
Wood Items	1973	Strain-24 Bruise-22	Struck by-21 Slip-19 Struck on-17	Back-17 Abdomen-9	June-9 Aug-9 Jan-9	Other Craftsman-40
	1974	Strain-25 Bruise-22	Struck by-38 Slip-25	Back-16 Abdomen-9	April-11 July-11 Nov-10	Other Craftsman-31
Machines	1973	Cut-18 Amputation-15	Caught-32	Finger-25	Oct-10 Sept-8 July-8	Farmer-31
	1974	Cut-29 Amputation-14	Caught-37	Finger-31	Oct-13 Nov-10	Farmer-39
Motor Vehicles	1973	Bruise-20 Fracture-12	Fall-20 Struck on-15	Abdomen-11 Back-11 Finger-7	July-9 May-6	Farmer-26
	1974	Bruise-30	Struck on-24 Struck by-15	Abdomen-15 Foot-7	July-9 Aug-9	Farmer-16 Laborer-15

Ohio: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Days Lost Time	Median Age	% Males
Power Tools	1973	38	0	9	27	87
	1974	44	0	8	20	91
Tractors	1973	42	1	21	27	98
	1974	38	2	30.5	23	97
Level Surfaces	1973	35	0	17	44	80
	1974	36	0	14	32	72
Hand Tools	1973	16	0	14	24	100
	1974	42	0	11	23	98

Ohio: Most Common Categories -- No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Occupation
Power Tools	1973	Cut-25	Struck by-15 Struck on-15	Finger-15 Leg-7	June-8 July-7	Farmer-21
	1974	Cut-29	Struck by-19 Struck on-15	Finger-16	July-11 May-6	Farmer-16 Other Craftsman-10
Tractors	1973	Bruise-14 Strain-13	Struck by-11 Fall-9	Abdomen-11 Foot-5	June-7 July-6 Jan-6	Farmer-28
	1974	Bruise-15 Fracture-15	Caught-13 Struck by-12 Struck on-10	Abdomen-10 Leg-8	Aug-7 June-7 July-6	Farmer-28
Level Surfaces	1973	Strain-18 Fracture-9	Fall-21 Slip-14	Back-12 Ankle-8	Oct-5 Dec-5	Laborer-10 Farmer-8 Other Craftsman-8
	1974	Strain-30 Bruise-8	Fall-22 Slip-14	Back-10 Ankle-6	July-6 Sept-5	Farmer-12 Laborer-8 Other Craftsman-8
Hand Tools	1973	Cut-16	Struck on-9	Leg-4 Finger-3	May-3 Nov-3	Other Craftsman-9
	1974	Cut-31	Struck by-26 Struck on-11	Leg-15 Finger-9	April-7 May-6 Aug-6	Other Craftsman-25

Ohio: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Days Lost Time	Median Age	% Males
Metal Items	1973	27	0	8	29	93
	1974	27	0	5	19.5	96
Animals	1973	20	0	21	32	100
	1974	28	0	8.5	28	89
Miscellaneous Surfaces	1973	14	0	14	34	71
	1974	28	0	8	44	64
Conveyors	1973	21	0	31	21.5	100
	1974	17	0	28	26	94

Ohio: Most Common Categories -- No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Occupation
Metal Items	1973	Cut-16	Struck on-13 Struck by-8	Foot-10	June-5 Oct-4	Farmer-14
	1974	Cut-18	Struck on-15 Struck by-8	Foot-13	June-6 Aug-4 Sept-4	Farmer-14
Animals	1973	Bruise-9 Strain-5 Fracture-4	Struck by-14	Abdomen-4 Back-3 Finger-3	April-3	Farmer-14
	1974	Cut-8 Bruise-7	Struck by-23	Abdomen-8 Hand-4	Aug-5	
Miscel-laneous Surfaces	1973	Strain-10	Fall-11	Back-7	Dec-3	Farmer-7
	1974	Strain-15 Bruise-9	Fall-14 Slip-14	Knee-7 Ankle-5 Abdomen-5 Back-5	May-6 Oct-5	Farmer-9 Laborer-6
Conveyors	1973	Cut-6 Fracture-5	Caught-15	Finger-6 Abdomen-4	Aug-4	Farmer-18
	1974	Cut-7 Bruise-6	Caught-12	Finger-5 Arm-3 Leg-3	Sept-4 June-3	Farmer-11

Ohio: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Days Lost Time	Median Age	% Males
Containers	1973	14	0	30	36	86
	1974	23	1	28	26.5	91
Other	1973	168	3	-	-	-
	1974	185	3	-	-	-
All Causes	1973	618	5	18.5	31	91
	1974	791	9	14	27	90

Ohio: Most Common Categories -- No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Occupation
Containers	1973	Strain-12	Slip-12	Back-7 Abdomen-5	April-4	Farmer-8
	1974	Strain-16	Slip-15 Struck by-7	Abdomen-7 Back-7	June-4 Nov-4	Farmer-13
Other	1973	-	-	-	-	-
	1974	-	-	-	-	-
All Causes	1973	Strain-168 Bruise-135 Cut-133	Struck by-126 Fall-123 Slip-123	Back-116 Abdomen-100 Finger-92	Jul6-80 Aug-63 June-61	Farmer-289 Other Craftsman-118 Laborer-85
	1974	Bruise-198 Strain-195 Cut-184	Struck by-211 Fall=160 Slip-141	Abdomen-135 Back-107 Finger-106	July-126 Sept-81 Aug-73 June-73	Farmer-330 Other Craftsman-139 Laborer-138

PUERTO RICO

Accident and Employment Data

Worker's Compensation Coverage			1st Quarter 1975			
Number of Workers+			53,000			
Type of Coverage			Compulsory, all workers covered.			
Accident Cases Reported (Fiscal Year)	1970	1971	1972	1973	1974	1975
Number of Accident Cases	93[a]	703[b]	4579[c]	4044[d]	4512[c]	1273[e]
Type of Accident Cases	All injury and illness cases.					

+ - Puerto Rico State Insurance Fund

a - Incomplete data provided

b - Incomplete data provided -- 200 cases were not analyzed due to tape errors

c - Complete data

d - Complete data -- 200 cases were not analyzed due to tape errors

e - Complete data for 1st semester of fiscal year only

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Puerto Rico Data Analysis

Accident causes were not given for Puerto Rico data, therefore summaries of reported variables are presented by industry and fiscal year reported. Partial data is available for fiscal 1970 and 1971 and likely is not representative of those years' experience. Complete data was obtained for fiscal years 1972 to 1974 but the 1975 analysis is missing 200 cases due to tape errors. Fiscal 1975 data is complete for the first semester only. Table 12 presents a definition of variables and an indexed set of tabulations giving the number of accidents and fatalities, median age of workers, and percent of workers who are male. Also given are the most commonly occurring categories and corresponding number of cases for accident nature, body part affected, and month of accident. The body part and nature variables both included codes for fatalities; however, they were not always in agreement. For the purpose of this analysis, a fatality was recorded if a fatality was indicated for either the body part or nature variable.

General farms and sugar cane plantations reported the most accidents and fatalities but the proportion of fatalities was greatest for sugar cane plantations. A larger proportion of female workers and younger workers suffered accidents in 1972 as compared to later years. For years with complete data, the months from February to May reported the most accidents; fingers, legs, eyes, and backs were the most common body part affected; and cuts, bruises, and strains were the usual natures of injury.

The only estimates of workers at risk are for the first quarter of 1975. The State Insurance Fund estimates 53,000 workers in agriculture, of which 12,000 were from sugar cane plantations, 9,000 from coffee plantations, and 32,000 from other agricultural industries. Assuming that these estimates represent close to the average number of workers per year and using the number of accidents occurring in the first quarter of 1974, the following rates have been calculated.

	Accident Rate per 1,000 Workers	
Industry	Per Quarter	Per Year
All Agriculture	25	100
Sugar Cane	52	208
Coffee	16	64
Other (General Farm, Fruit, Florist, Coconut)	17	68

Clearly, sugar cane plantations seem to be about three times as hazardous as other agricultural industries.

Table 12. Puerto Rico Case Data Tabulations

Note: A description of some of the variables used in the tabulations is given below. On the next page is an index that allows the reader to find statistics for a particular industry. To see all statistics for a given industry, be sure to look at both pages shown in the index.

Description of Variables

Accident Nature

Bruise - Contusion or Bruise - Dermatitis
Strain - Pain, sprain
Cut - Wound, laceration, Puncture

Index to Tabulations

Industry	Page No.
General Farming	130-131
Sugar Cane	130-131
Coffee	132-133
Fruit	132-133
Florist	134-135
Coconut	134-135
All Industries	136-137

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Puerto Rico: Descriptive Statistics

Industry	Fiscal Year	No. of Accidents	No. of Fatalities	Median Age	% Males
General Farming	1970-a	37	0	19	14
	1971-b	194	2	19	22
	1972-c	2,010	6	25.5	68
	1973-d	1,882	8	40	95
	1974-e	2,065	4	39	94
	1975-e	696	2	39	89
Sugar Cane	1970-a	43	1	19	12
	1971-b	228	2	19	25
	1972-c	1,635	10	34	80
	1973-d	1,144	6	43	98
	1974-e	1,614	8	40	97
	1975-e	270	1	46	92

Puerto Rico: Most Common Categories -- No. of Cases

Industry	Fiscal Year	Month of Accident	Body Part Affected	Nature of Accident
General Farming	1970-a	June-5, Jan-4 Feb-4	Trunk-11, Back-5	Bruise-18, Strain-11
	1971-b	June-72, May-32	Back-30, Leg-26 Hand-22	Bruise-67, Strain-53 Cut-67
	1972-c	Aug-198, July-189 April-187	Finger-321, Leg-255 Back-202	Cut-838, Bruise-616 Strain-[illegible]75
	1973-d	March-227, May-189 July-171	Finger-277, Leg-261 Back-199	Cut-753, Bruise-604 Strain-422
	1974-c	Aug-197, June-185 April-182, Oct-182	Finger-345, Leg-289 Back-207	Cut-895, Bruise-648 Strain-422
	1975-3	Aug-173, July-154 Sept-153	Finger-110, Leg-90 Foot-72	Cut-324, Strain-167 Bruise-151
Sugar Cane	1970-a	April-11, May-9 March-8	Back-12, Trunk-9	Bruise-16, Strain-12 Cut-8
	1971-b	June-78, May-50	Back-38, Leg-27 Finger-25	Strain-70, Bruise-59 Cut-46
	1972-c	March-250, May-210 Feb-208	Finger-294, Leg-234 Eye-194	Cut-623, Bruise-495 Strain-389
	1973-d	March-186, May-182 April-173	Finger-176, Leg-156 Eye-143	Cut-442, Bruise-341 Strain-289
	1974-c	March-284, April-250 May-223	Finger-258, Leg-220 Eye-208	Cut-632, Strain-458 Bruise-426
	1975-c	July-88, Aug-75	Finger-49, Back-39	Strain-102, Cut-88 Bruise-63

Puerto Rico: Descriptive Statistics

Industry	Fiscal Year	No. of Accidents	No. of Fatalities	Median Age	% Males
Coffee	1970-a	7	0	19	0
	1971-b	53	0	19	25
	1972-c	687	2	22	58
	1973-d	624	0	39	81
	1974-c	655	1	37	80
	1975-e	234	0	34	73
Fruit	1970-a	6	0	19	0
	1971-b	28	0	19	25
	1972-c	219	0	19	54
	1973-d	171	0	40	87
	1974-c	157	0	48	85
	1975-e	66	0	46	82

Puerto Rico: Most Common Categories -- No. of Cases

Industry	Fiscal Year	Month of Accident	Body Part Affected	Nature of Accident
Coffee	1970-a	June-2, Sept-2	Back-2	Strain-3, Cut-2 Bruise-2
	1971-b	June-19	Hand-8, Foot-8 Eye-8	Cut-16, Strain-15 Bruise-14
	1972-c	Oct-81, Aug-80 Sept-74	Leg-116, Finger-106	Cut-317, Bruise-170 Strain-142
	1973-d	Oct-85, Nov-75	Leg-99, Hand-69 Eye-67	Cut-267, Bruise-183 Strain-145
	1974-c	Oct-81, Aug-75 Nov-73	Finger-99, Leg-86	Cut-283, Bruise-188 Strain-167
	1975-e	Aug-59, July-56	Finger-39, Leg-33 Hand-29	Cut-110, Strain-62 Bruise-50
Fruit	1970-a	*	Back-2	Bruise-2, Strain-2
	1971-b	June-17	Leg-6, Back-5	Strain-10, Bruise-10 Cut-8
	1972-c	July-30, Oct-25	Hand-31, Back-26 Leg-26	Cut-96, Strain-56 Bruise-52
	1973-d	July-24, Sept-21 Oct-19	Finger-30, Back-27 Leg-21	Cut-62, Bruise-61 Strain-44
	1974-c	Nov-17, March-17 June-16, Oct-16	Back-22, Hand-22 Finger-22	Cut-64, Bruise-48 Strain-41
	1975-e	July-21, Aug-15	Finger-11, Leg-9	Bruise-31, Cut-23 Strain-10

Puerto Rico: Descriptive Statistics

Industry	Fiscal Year	No. of Accidents	No. of Fatalities	Median Age	% Males
Florist	1970-a	0	0	-	-
	1971-b	3	0	19	0
	1972-c	18	0	28.5	67
	1973-d	17	0	26.5	53
	1974-c	18	0	33	83
	1975-e	6	0	42	83
Coconut	1970-a	0	0	-	-
	1971-b	0	0	-	-
	1972-c	4	0	33.5	100
	1973-c	6	0	51	100
	1974-c	3	0	33	100
	1975-e	1	0	Unknown	100

Puerto Rico; Most Common Categories -- No. of Cases

Industry	Fiscal Year	Month of Accident	Body Part Affected	Nature of Accident
Florist	1970-a	-	-	-
	1971-b	May-2	*	*
	1972-c	Jan-3, April-3 Dec-3	Leg-4, Foot-3 Finger-3	Strain-6, Bruise-6 Cut-4
	1973-d	July-3, Oct-3	Leg-3, Foot-3 Eye-3	Bruise-8, Cut-7
	1974-c	Oct-5, June-3	Back-5, Finger-3	Bruise-6, Strain-6 Cut-5
	1975-e	Aug-2, Sept-2	Finger-2, Leg-2	Cut-4
Coconut	1970-a	-	-	-
	1971-b	-	-	-
	1972-c	*	Foot-3	Cut-4
	1973-c	Feb-2	Eye-2	Cut-2, Bruise-2
	1974-c	*	*	*
	1975-e	*	*	*

Puerto Rico: Descriptive Statistics

Industry	Fiscal Year	No. of Accidents	No. of Fatalities	Median Age	% Males
All Industries	1970-a	93	1	19	11
	1971-b	503	4	19	24
	1972-c	4,579	18	27	70
	1973-d	3,844	14	40	92
	1974-c	4,512	13	39	93
	1975-e	1,273	3	39	86

Puerto Rico: Most Common Categories -- No. of Cases

Industry	Fiscal Year	Month of Accident	Body Part Affected	Nature of Accident
All Industries	1970-a	April-15, June-15 May-13, March-12	Abdomen-25, Back-21	Bruise-38, Strain-28 Cut-16
	1971-b	June-186, May-95	Back-78, Leg-62 Hand-55, Finger-51	Bruise-151, Strain-148 Cut-117
	1972-c	March-488, May-456 Feb-449, April-435	Finger-749, Leg-635 Eye-464, Back-461	Cut-1882, Bruise-1339 Strain-978
	1973-d	March-458, May-423 July-359, April-353	Finger-547, Leg-540 Back-404	Cut-1533, Bruise-1199 Strain-903
	1974-c	March-521, April-479 May-448, Feb-447	Finger-727, Leg-615 Eye-462, Back-457	Cut-1880, Bruise-1317 Strain-1095
	1975-e	Aug-324, July-321 Sept-256	Finger-211, Hand-163 Leg-155	Cut-549, Strain-342 Bruise-296

a - Incomplete data provided - all analyzed.

b - Incomplete data provided - 200 cases missing from analysis due to tape errors.

c - Complete data - all analyzed.

d - Complete data provided - 200 cases missing from analysis due to tape errors.

e - Complete data provided for 1st semester of fiscal 1975 - all analyzed.

* - There is no category with more than one case.

TENNESSEE

Accident and Employment Data

State Statistics*	1970	1971	1972	1973	1974
Total Farm Workers	153,000	151,000	153,000	147,000	148,000
Hired Farm Workers	29,000	28,000	28,000	26,000	27,000

Worker's Compensation Coverage	1970	1971	1972	1973	1974
Number of Workers Covered	Not Provided				
Type of Coverage	Elective				

Accident Cases Reported	1970	1971	1972	1973	1974
Number of Accident Cases	-	-	-	49	32
Number of Fatal Accident Cases	32	31	19	-	-
Number of Disease Cases	30	19	26	22	-
Type of Accident Cases	Accident cases from Department of Labor, Workmen's Compensation Division. Fatal accident cases in agriculture and possible agriculture related notifiable diseases from Department of Public Health.				

* - USDA Statistical Reporting Service

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Tennessee Accident Data Analysis

For the worker's compensation cases provided, Table 13 presents a definition of variables and an indexed set of tabulations giving the number of accidents, number of fatalities, median age of the workers, and percent of workers who are male. The data is presented by accident cause and year reported. Also given are the most frequently occurring categories and corresponding number of cases for accident nature, accident type, body part affected. month of accident, and occupation of injured worker.

Working surfaces were the most common accident cause followed by machines, vehicles, animals, and containers. There were no reported fatalities. Eighty-five percent of the injuries were to males. The most frequent accident nature was strains; the most frequent accident type was falls; and the most frequent body part affected was the back. Farm and nursery laborers accounted for most of the accidents and December had the most accidents of any month.

Since worker's compensation coverage is elective and since no estimates of that coverage is available, no injury rates have been calculated.

Table 13. Tennessee Accident Case Data Tabulations

Note: A description of some of the variables used in the tabulations is given below. On the next page is an index that allows the reader to find statistics for a particular accident cause. To see all statistics for a given accident cause, be sure to look at both pages shown in the index.

Description of Variables

Accident Nature

- Strain - Sprains, strains
- Multiple - Multiple injuries
- Cut - Cut, laceration, puncture, open wound

Accident Type

- Fall - Fall from elevation, fall on same level
- Caught - Caught in, under, or between; in running or meshing objects; moving and stationary objects; collapsing materials
- Motor Vehicle - Motor vehicle accidents (collision or sideswipe and noncollision accidents)
- Struck by - Struck by stationary, moving, falling, flying objects
- Overexertion - Overexertion in lifting, pulling, pushing, wielding, and throwing objects

Occupation

- Nursery Laborer - Nursery laborer, gardener, worker in horticultural services
- Farm Laborer - Farm laborer, farmer

Index to Tabulations

Accident Cause	Page No.
Working Surfaces	144-145
Machines	144-145
Vehicles	144-145
Animals	144-145
Containers	146-147
Other	146-147
All Causes	146-147

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Tennessee Accident: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Working Surfaces	1973	10	0	35.5	70
	1974	7	0	43	100
Machines	1973	7	0	35	100
	1974	6	0	28.5	83
Vehicles	1973	9	0	42	78
	1974	2	0	26.5	100
Animals	1973	5	0	19	100
	1974	4	0	39	100

Tennessee Accident: Most Common Categories - No. of Cases.

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Occupation
Working Surfaces	1973	Strain-5 Fracture-4	Fall-10	Multiple-3	Jan-2 Sept-2	Nursery Laborer-5 Farm Laborer-4
	1974	*	Fall-7	Back-3	May-2	Farm Laborer-4 Nursery Laborer-2
Machines	1973	Cut-2 Amputation-2 Multiple-2	Caught-6	Finger-3 Multiple-2	Feb-2	Farm Laborer-3 Nursery Laborer-2
	1974	Cut-2	Caught-4	Finger-3 Hand-2	Nov-2	Farm Laborer-4
Vehicles	1973	*	Motor Vehicle-6	Multiple-3	Dec-5 June-2	Farm Laborer-7
	1974	*	Motor Vehicle-2	*	*	*
Animals	1973	Fracture-2	Struck by-3	*	April-2	Farm Laborer-4
	1974	*	Struck by-3	*	*	Farm Laborer-2

Tennessee Accident: Descriptive Statistics

Cause of Accident	Year Reported	No. of Accidents	No. of Fatalities	Median Age	% Males
Containers	1973	6	0	42	67
	1974	1	0	Unknown	100
Other	1973	12	0	-	-
	1974	12	0	-	-
All Causes	1973	49	0	41.5	82
	1974	32	0	33	91

Tennessee Accident: Most Common Categories - No. of Cases

Cause of Accident	Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Occupation
Containers	1973	Strain-4	Overexertion-4	Back-4	May-2 Dec-2	Farm Laborer-2
	1974	*	*	*	*	*
Other	1973	-	-	-	-	-
	1974	-	-	-	-	-
All Causes	1973	Strain-15 Fracture-9	Fall-15 Overexertion-8 Struck by-7 Caught-7	Back-10 Multiple-8 Finger-5	Dec-9 Aug-7	Farm Laborer-22 Nursery Laborer-13
	1974	Cut-6 Strain-5	Fall-9 Struck by-9 Caught-4	Back-8 Finger-4	Dec-6 Aug-4 May-4	Farm Laborer-17 Nursery Laborer-6

*There is no category with more than one case.

Tennessee Fatal Accident Data Analysis

The Department of Public Health has provided summaries of fatal accidents in agriculture. Table 14 presents an indexed set of tabulations giving the number of fatalities by cause and by year reported. Also given are the median age of the worker, percent of the fatalities who are males, median duration of injury, and the most commonly occurring month of injury, place of injury, and type of machine involved (if any).

Machinery caused the most fatalities and tractors were the most common machine type involved. The median age of fatally injured workers was 53 years, 94% of the fatalities were male, the median duration of injury was less than one day, and most fatalities occurred on the farm.

Since these fatal accidents represented the entire agricultural population, the USDA estimates of total farm workers was used a denominators. The fatal accident rates for 1970, 1971, and 1972 were 0.2, 0.2, and 0.1 fatalities per 1,000 workers per year.

Table 14. Tennessee Fatal Accident Case Data Tabulations

Note: On this page is an index that allows the reader to find statistics for a particular accident cause.

Index to Tabulations

Cause	Page No.
Machinery	150
Struck Against or By	150
Struck by Falling Object	150
Other	150
All Causes	151

Tennessee Fatal Accidents

Cause of Accident	Year Reported	Descriptive Statistics: No. of Fatalities	Median Age	% Males	Median Duration of Injury	Most Common Categories - No. of Cases: Month of Injury	Place of Injury	Machine Type Involved
Machinery	1970	14	50.5	100	<1 day	July-4 March-2 April-2	Farm-12	Tractor-13
	1971	14	56	93	<1 day	April-4 June-3	Farm-11	Tractor-13
	1972	7	65	100	<1 day	May-2 Sept-2	Farm-4	Tractor-6
Struck Against or By	1970	11	58	82	<1 day	July-3	Farm-9	Tractor-6
	1971	4	50	100	<1 day	Sept-2	Farm-4	Tractor-2
	1972	1	62	100	2-6 days	*	*	*
Struck by Falling Object	1970	3	62	100	<1 day	*	Other-2	-
	1971	5	33	80	<1 day	Aug-2	Other-3	*
	1972	6	47	100	<1 day	*	Farm-3 Other-3	*
Other	1970	4	-	-	-	-	-	-
	1971	8	-	-	-	-	-	-
	1972	5	-	-	-	-	-	-

Tennessee Fatal Accidents

Cause of Accident	Year Reported	Descriptive Statistics: No. of Fatalities	Median Age	% Males	Median Duration of Injury	Most Common Categories - No. of Cases: Month of Injury	Place of Injury	Machine Type Involved
All Causes	1970	32	53	88	<1 day	July-10 April-5	Farm-25	Tractor-19
	1971	31	53	97	<1 day	April-7 June-6	Farm-22	Tractor-16
	1972	19	53	100	<1 day	Sept-5	Farm-12	Tractor-9

*There is no category with more than 1 case.

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Tennessee Notifiable Disease Data Analysis

The Department of Public Health has provided cases of notifiable diseases from 1970 to 1973 that could possibly be related to agriculture; however, no connection has been made between the reported disease and any occupational exposure. Table 15 presents an indexed set of tabulations of the selected cases by disease type and year reported. The number of diseases, median age of the person suffering the disease, percent of persons who are males, and the most commonly occurring month of disease are given.

No rate calculation is possible for Tennessee disease data.

Table 15. Tennessee Disease Case Data Tabulations

Note: On this page is an index that allows the reader to find statistics for a particular disease type.

Index to Tabulations

Disease	Page No.
Tularemia	154
Brucellosis	154
Tetanus	154
Other Diseases	155
All Diseases	155

Tennessee Disease: Descriptive Statistics

Disease	Year Reported	No. of Diseases	Median Age	% Males	Most Commonly Occurring Month of Disease
Tularemia	1970	14	25.5	71	January - 3 November - 3 December - 3
	1971	8	47.5	75	February - 2 July - 2 October - 2
	1972	8	42	75	July - 2 September - 2
	1973	6	35.5	83	January - 2
Brucellosis	1970	6	32.5	83	June - 2
	1971	4	43	75	*
	1972	10	31.5	90	April - 2 June - 2 November - 2
	1973	9	35	89	June - 2 July - 2
Tetanus	1970	6	52.5	67	August - 2 November - 2
	1971	6	54.5	50	June - 3
	1972	8	62	25	April - 3 May - 2
	1973	5	70	80	May - 2

Tennessee Disease: Descriptive Statistics

Disease	Year Reported	No. of Diseases	Median Age	% Males	Most Commonly Occurring Month of Disease
Other Diseases	1970	4	-	-	-
	1971	1	-	-	-
	1972	0	-	-	-
	1973	2	-	-	-
All Diseases	1970	30	27	67	August - 6 November - 5
	1971	19	49	79	June - 4 October - 4
	1972	26	40.5	65	April - 5 May - 4
	1973	22	35.5	82	August - 4

*There is no month with more than one case.

VERMONT

Accident and Employment Data

Employment Statistics*	1974	1975
Total Farm Workers	12,000	--
Hired Farm Workers	2,900	--

Worker's Compensation Coverage	1974	1975
Number of Worker's Covered	Not Provided	Not Provided
Type of Coverage	Compulsory for employers with aggregate payroll for the year greater than $1,000.	

Accident Cases Reported	1974	1975
Number of Accident Cases	240[a]	317[b]
Type of Accident Cases	Injury and Illness (44% Lost Time)	

* - USDA Statistical Reporting Service

a - 2nd semester of year only

b - 1st nine months of year only

Vermont Data Analysis

Summaries of reported variables are presented by cause of accident and by fiscal year reported. Table 16 presents a definition of variables and an indexed set of tabulations giving the number of accidents and fatalities, percent of accidents with lost time, percent of accidents occurring on the employer's premises, median age of the injured workers, and percent of the accidents occurring to males. Also given are the most commonly occurring categories and number of cases for accident nature, accident type, body part affected, month of accident, and occupation and industry of the worker.

There is no complete data for a calendar year but there were 435 reported cases for fiscal year 1975. One fatality was recorded, due to vehicle. Animals, working surfaces, metal items, and bodily motion accounted for the most accidents. Accidents with the most lost time were caused by machines. Tools injured younger workers and bodily motion injured older workers. Ninety-five percent of all accidents were to males.

Cuts, strains, and bruises were the most common accident nature. Falls, being struck by objects, and striking against objects were the usual accident types. Fingers and backs were the body parts most affected. July had the most accidents. Farmers and laborers from general farms, livestock farms, and horticultural services were the types of workers usually involved in accidents.

Using the 1974 USDA estimates of the number of hired workers in Vermont, the rough estimate of the accident rate for fiscal 1975 is 150 accidents per 1,000 workers per year, however only 46% of the accidents were lost time accidents.

Table 16. Vermont Case Data Tabulations

Note: A description of some of the variables used in the tabulations is given below. On the next page is an index that allows the reader to find statistics for a particular accident cause. To see all statistics for a given accident cause, be sure to look at both pages shown in the index.

Description of Variables

Accident Nature

- Bruise - Contusion, bruise - intact skin
- Cut - Cut, laceration, puncture
- Strain - Strains, sprains
- Scratch - Scratches, abrasions
- Rash - Dermatitis, rash

Accident Type

- Struck on - Striking against objects
- Struck by - Struck by objects
- Caught - Caught in, under, or between
- Fall - Fall from elevation, fall on same level
- Fubbed - Rubbed or abraded
- Toxic Contact - Contact with radiation, caustics, toxic substances
- Overexertion - Overexertion in lifting, pulling, pushing, wielding, or throwing objects

Industry

- General Farms - Crop and livestock farms combined, general farms
- Livestock - Livestock farms
- Fruit, Nut - Fruit, tree nuts, and vegetable farms
- Horticultural Services - Establishments engaged in performing horticultural services such as cemetery upkeep, landscape gardening, and tree planting

Occupation

- Farmers - Farm workers, farmers
- Laborers - Laborers other than farm laborers

Index to Tabulations

Accident Cause	Page No.
Animals	162-163
Working Surfaces	162-163
Metal Items	162-163
Bodily Motion	162-163
Vehicles	162-163
Plants, Trees	164-165
Hand Tools	164-165
Machines, Mechanical Power	164-165
Power Tools	164-165
Containers	164-165
Wood Items	166-167
Other	166-167
All Causes	166-167

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Vermont: Descriptive Statistics

Cause of Accident	Fiscal Year Reported	No. of Accidents	No. of Fatalities	% with Lost Time	% occurring on Premises	Median Age	% Males
Animals	1975	71	0	41	94	25.5	85
	1976+	16	0	25	94	24	100
Working Surfaces	1975	55	0	58	92	28	93
	1976+	23	0	26	91	25	83
Metal Items	1975	41	0	38	90	27	95
	1976+	15	0	33	86	25	100
Bodily Motion	1975	37	0	53	81	28.5	95
	1976+	17	0	47	94	33	100
Vehicles	1975	28	1	46	86	21	93
	1976+	7	0	57	100	40.5	100

Vermont: Descriptive Statistics

Cause of Accident	Fiscal Year Reported	No. of Accidents	No. of Fatalities	% with Lost Time	% occurring on Premises	Median Age	% Males
Plants, Trees	1975	21	0	62	69	26	100
	1976+	10	0	30	25	24	100
Hand Tools	1975	22	0	18	76	22	100
	1976+	9	0	11	86	22	100
Machines, Mechanical Power	1975	19	0	53	95	26	100
	1976+	6	0	67	100	32	100
Power Tools	1975	19	0	44	59	23	100
	1976+	1	0	100	100	20	100
Containers	1975	17	0	88	82	25	94
	1976+	1	0	0	100	16	100

Vermont: Most Common Categories -- No. of Cases

Cause of Accident	Fiscal Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry	Occupation
Animals	1975	Bruise-26 Cut-12 Strain-12	Struck by-45 Caught-13	Finger-11 Leg-9 Chest-8	Sept-11 April-10 May-10	General Farm-35 Livestock-23	Farmer-56
	1976*	Scratch-4 Cut-3 Bruise-3	Struck by-15	Face-3 Finger-3 Multiple-3	Aug-8	Livestock-8 General Farm-6	Farmer-12
Working Surfaces	1975	Strain-22 Bruise-14 Fracture-10	Fall-50	Back-13 Leg-9	Oct-13 June-9	General Farm-22 Livestock-15 Fruit,Nut-10	Farmer-42
	1976*	Strain-7 Bruise-6 Cut-5	Fall-12	Finger-7	July-11 Sept-7	General Farm-10 Livestock-6	Farmer-13 Laborer-6
Metal Items	1975	Cut-23	Struck by-16 Struck on-13	Finger-11 Foot-8	May-6 June-6 Nov-6	General Farm-20 Livestock-12	Farmer-26
	1976*	Cut-8	Struck by-5 Struck on-5	Finger-5 Hand-3	July-6 Aug-4	General Farm-10	Farmer-11
Bodily Motion	1975	Strain-26	Body Reaction-28	Back-17	Oct-7 Sept-6 April-5	General Farm-15 Livestock-11	Farmer-22
	1976*	Strain-14	Body Reaction-16	Back-7 Ankle-3	Sept-6 July-5	General Farm-10	Farmer-12
Vehicles	1975	Cut-8 Bruise-7	Caught-7 Struck on-5 Fall-5	Leg-5 Finger-5 Multiple-3	July-6 Aug-6	Livestock-14 General Farm-9	Farmer-22
	1976*	Bruise-4	Fall-3 Caught-2	Leg-2	July-5	General Farm-5	Farmer-5

Vermont: Most Common Categories -- No. of Cases

Cause of Accident	Fiscal Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry	Occupation
Plants, Trees	1975	Bruise-5 Rash-5 Scratch-4	Struck by-13 Rubbed-5	Multiple-5 Eye-4 Face-3	July-7	Horticultural Service-10 General Farm-5 Fruit, Nut-4	Laborer-8 Farmer-6
	1976+	Rash-6	Toxic Contact-6	Arm-5	July-6	Horticultural Service-6	Farmer-4 Laborer-3
Hand Tools	1975	Cut-15	Struck on-13 Struck by-8	Finger-8 Leg-3	May-4 July-4 Oct-3	General Farm-7 Horticultural Service-6 Livestock-5	Farmer-10 Laborer-4 Foreman-4
	1976+	Cut-6	Struck on-5 Struck by-3	Finger-4 Hand-3	Aug-4 July-2	General Farm-4 Horticultural Service-4	Farmer-4 Laborer-2 Foreman-2
Machines, Mechanical Power	1975	Cut-10	Caught-11	Finger-12	July-6 Aug-3 Sept-3	General Farm-9 Livestock-9	Farmer-17
	1976+	Bruise-2 Amputation-2	Caught-6	Finger-2	Sept-4	General Farm-4	Farmer-5
Power Tools	1975	Cut-19	Struck on-11 Struck by-6	Leg-8 Finger-5	Nov-4 April-3	Horticultural Service-6 General Farm-5 Livestock-5	Farmer-11
	1976+	*	*	*	*	*	*
Containers	1975	Strain-12	Overexertion-9 Struck by-6	Back-13	June-3 Aug-3	Livestock-7 General Farm-5	Farmer-12
	1976+	*	*	*	*	*	*

Vermont: Descriptive Statistics

Cause of Accident	Fiscal Year Reported	No. of Accidents	No. of Fatalities	% with Lost Time	% occurring on Premises	Median Age	% Males
Wood Items	1975	12	0	8	75	26	92
	1976*	5	0	40	100	35	100
Other	1975	93	0	-	-	-	-
	1976*	12	0	-	-	-	-
All Causes	1975	435	1	46	86	26	94
	1976*	122	0	36	88	26	97

Vermont; Most Common Categories -- No. of Cases

Cause of Accident	Fiscal Year Reported	Accident Nature	Accident Type	Body Part Affected	Month of Accident	Industry	Occupation
Wood Items	1975	Cut-5 Scratch-4	Rubbed-4 Struck on-4 Struck by-3	Finger-4 Eye-4	Oct-4 April-2 July-2	Horticultural Service-4 Livestock-4 General Farm-3	Farmer-8
	1976+	Strain-2	Struck by-4	Finger-2	July-3 Sept-2	General Farm-4	Farmer-4
Other	1975	-	-	-	-	-	-
	1976+	-	-	-	-	-	-
All Causes	1975	Cut-115 Strain-93 Bruise-88	Struck by-131 Fall-70 Struck on-66	Finger-72 Back-57 Leg-53	July-58 Oct-50 Sept-46	General Farm-171 Livestock-131 Horticultural Service-56 Fruit, Nut-46	Farmer-292 Laborer-57
	1976+	Cut-29 Strain-29 Bruise-22	Struck by-35 Struck on-18	Finger-28 Back-14 Eye-10	July-45 Aug-29 Sept-27	General Farm-63 Livestock-30 Horticultural Service-19	Farmer-78 Laborer-24

+ - Fiscal 1976 contains only data reported for the 1st Quarter (July, August, September-1975)

* - There is no category with more than one case.

SUMMARY OF DATA ANALYSIS

Differences in the collection and coding of case data by the various data sources make the task of combining data across data sources very risky. Conclusions should be made from the analyses of individual data sources. Certain common factors can be seen, however, such as the preponderance of accidents to males over females; the large numbers of injuries to younger workers; the seasonal trends for accidents to occur from May to October; the most common accident natures being cuts, burns, strains, and fractures; the most common accident types being struck by or against objects, overexertion, falls, being caught, and contact with toxic substances; and the usual body parts affected being backs, fingers, and eyes.

The most important factor to examine is the accident cause. Disregarding the disparity in data collection schemes and number of cases, an attempt was made to look for similar causes across states. The ten most common accident causes were selected and each cause was ranked within each state as to the number of accidents it caused. Table 17 summarizes the rankings for each state and presents the average ranking across states. This may give an idea of accident causes which are more universal in agriculture and not specific to particular states. The most hazardous accident cause is working surfaces followed by vehicles and then tools. Animals and machines are the next most hazardous causes. Containers, wood items, plants, and metal items have approximately the same ranking. Last in the list of ten is toxic substances, even though it ranked high in California. This again demonstrates the need for looking at individual states to discover an individual state's problems.

Three sets of accident rates have been calculated as comparably as possible, but they should be reviewed with the state-to-state differences in mind. Table 18 gives lost time accident rates (both illness and injury combined) by year and by state. USDA estimates of the number of hired agricultural workers were used as denominators, in the absence of other estimates. For comparison, the Bureau of Labor Statistics[7] estimated that in 1973, the rate for lost time accidents was 46 per 1,000 farm workers.

Table 19 gives rates for reportable occupational illnesses by year for California and New Jersey, the only states where illnesses are easily separable from total accidents.

Table 20 presents fatality rates by location and by year. USDA estimates of the number of hired workers were used as denominators for all locations except Tennessee and Puerto Rico. USDA estimates of the total

(Text continues on page 174.)

Table 17. Ranking of Predominant Accident Causes by State
(A ranking of 1 is the most common accident cause)

Accident Cause	State						Mean Rank	Median Rank
	Cal.	N.J.	N.Y.	Ohio	Tenn.	Vt.		
Working Surfaces	1	1	1	1	1	2	1.2	1.0
Vehicles	2	4	2	2	3	5	3.0	2.5
Tools	5	2	3	3	6.5	4	3.9	3.5
Animals	7	6	5	7	4	1	5.0	5.5
Machines	6	9	4	5	2	7	5.5	5.5
Containers	8	5	7	9	5	8	7.0	7.5
Wood Items	9	8	6	4	6.5	9	7.1	7.2
Plants, Plant Products	4	3	10	10	9.5	6	7.1	7.8
Metal Items	10	7	8	6	9.5	3	7.2	7.5
Toxic Substances	3	10	9	8	8	10	8.0	8.5

Table 18. Lost Time Accident Rates by State
(Lost time accidents per 1,000 hired workers per year)

State	Year	Lost Time Accidents	No. of Hired Workers	Accident Rate
California	1970	13,577	197,000	69
	1971	13,110	204,000	64
	1972	12,896	211,000	61
	1973	13,958	215,000	65
	1974	14,523*	231,000	63
New Jersey	1973	662	10,000	66
	1974	745	9,000	83
New York	1972	1,101	25,000	44
	1973	1,055	29,000	36
Ohio	1973	618	19,000	33
	1974	791	19,000	42
Vermont	Fiscal 1975	200	3,000	67

*Adjusted for missing cases

Table 19. Reportable Illness Rates by State
(Reported illnesses per 1,000 hired workers per year)

State	Year	Reported Illnesses	No. of Hired Workers	Illness Rate
California	1970	2,750	197,000	14
	1971	2,925	204,000	14
	1972	2,998	211,000	14
	1973	3,126	215,000	15
	1974	2,927	231,000	13
New Jersey	1973	97	10,000	10
	1974	136	9,000	15

Table 20. Fatality Rates by State
(Fatalities per 1,000 workers at risk per year)

State	Year	Number of Fatalities	Number of Workers at Risk	Fatality Rate
California	1970	74	197,000	0.4
	1971	59	204,000	0.3
	1972	62	211,000	0.3
	1973	66	215,000	0.3
	1974	87*	231,000	0.4
New Jersey	1973	12	10,000	1.2
	1974	8	9,000	0.9
New York	1972	29	25,000	1.2
	1973	14	29,000	0.5
Ohio	1973	5	19,000	0.3
	1974	9	19,000	0.5
Puerto Rico	Fiscal 1972	18	53,000	0.4
	Fiscal 1973	15*	53,000	0.3
	Fiscal 1974	13	53,000	0.2
Tennessee	1970	32	153,000	0.2
	1971	31	151,000	0.2
	1972	19	153,000	0.1
Vermont	Fiscal 1975	1	3,000	0.3

*Adjusted for missing cases

agricultural workers were used for Tennessee. No yearly estimates were available for Puerto Rico so the only available figure was used for all years -- the number of workers during the first quarter of 1975. For comparison to national statistics, the National Safety Council[7] estimates a fatality rate for agricultural fatal accidents in 1974 to be 0.5 deaths per 1,000 workers.

COMPUTER SYSTEM DEVELOPMENT

Introduction

For the National Data Collection System, a computer system is being developed to provide an effective and efficient link between collected data and the need of users for information embodied in the data.

The overall goal of the system is to provide the capability for validation, error correction, and storage of collected records; selection of desired sets of data for further processing; analytical processing and calculating; and presentation of processing results. The system under development may be described as consisting of three major elements:

1. an interactive data base with special accessing programs,
2. a tape data base, and
3. statistics analysis capability.

Each of the elements is made up of computer equipment and programs. The equipment consists of remote terminals located at NIOSH facilities in Salt Lake City, a dedicated telephone data line, and the equipment complex at the Parklawn Computer Center (PCC), Rockville, Maryland. The extensive capabilities of this equipment are employed via general and special purpose programs.

Interactive Data Base and Programs

1. Requirements. A system overview is shown in Figure 3. Statistics must be derived from the Worker's Compensation data discussed in previous chapters. Essential features from the computer system design standpoint were that the data would be in a variety of formats, would arrive on cards or tapes, and that new data would continually be added. An order of a magnitude estimate of data volume was 100,000 records on hand and growth by this amount each year. The data must be secure from loss or accidental modification.

Another requirement was that the system must use interactive communication. Response to a user request for statistical information must take no longer than several seconds. The system must be usable by a technical group consisting of health scientists including a biostatistician, an epidemiologist, and a toxicologist, as well as administrators. Principal system users asking for statistics would not be computer professionals.

An administrative requirement was that the system must require no more than two man-months of effort to develop.

A hierarchical diagram of needed software functions is shown in Figure 4.

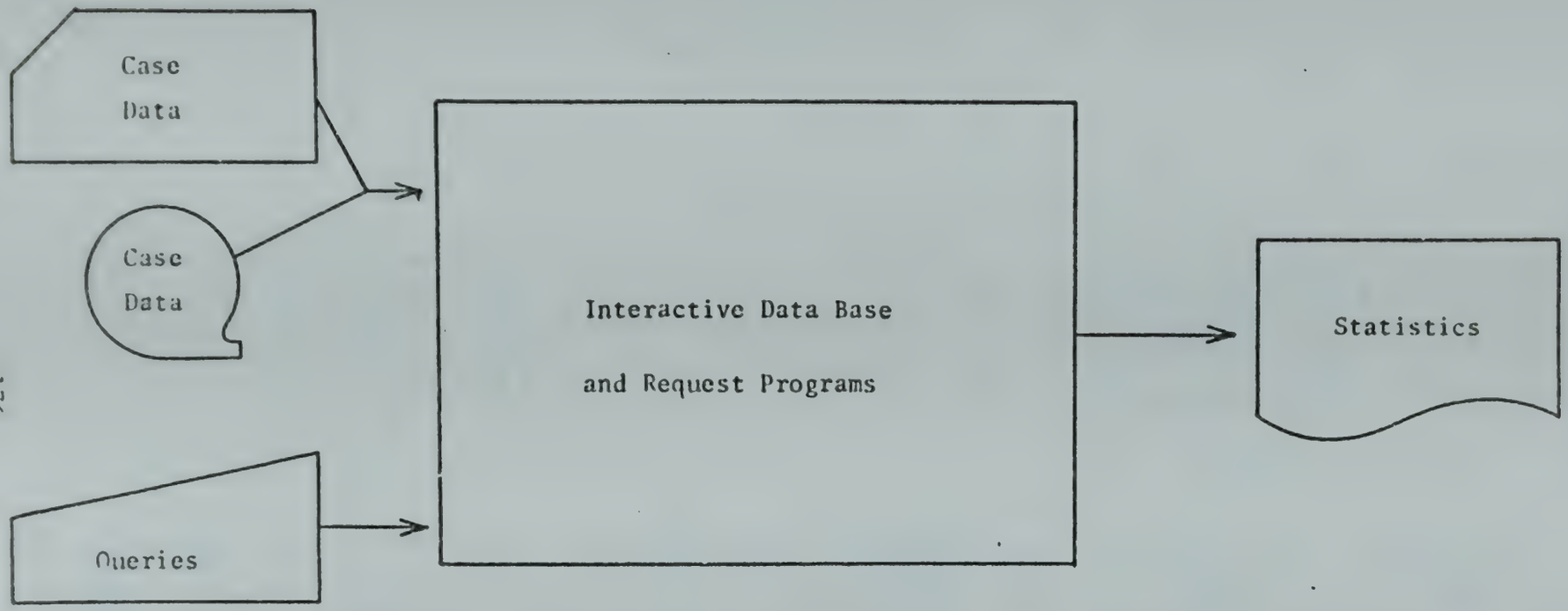

Fig. 3. Interactive Data Base.
System Overview.

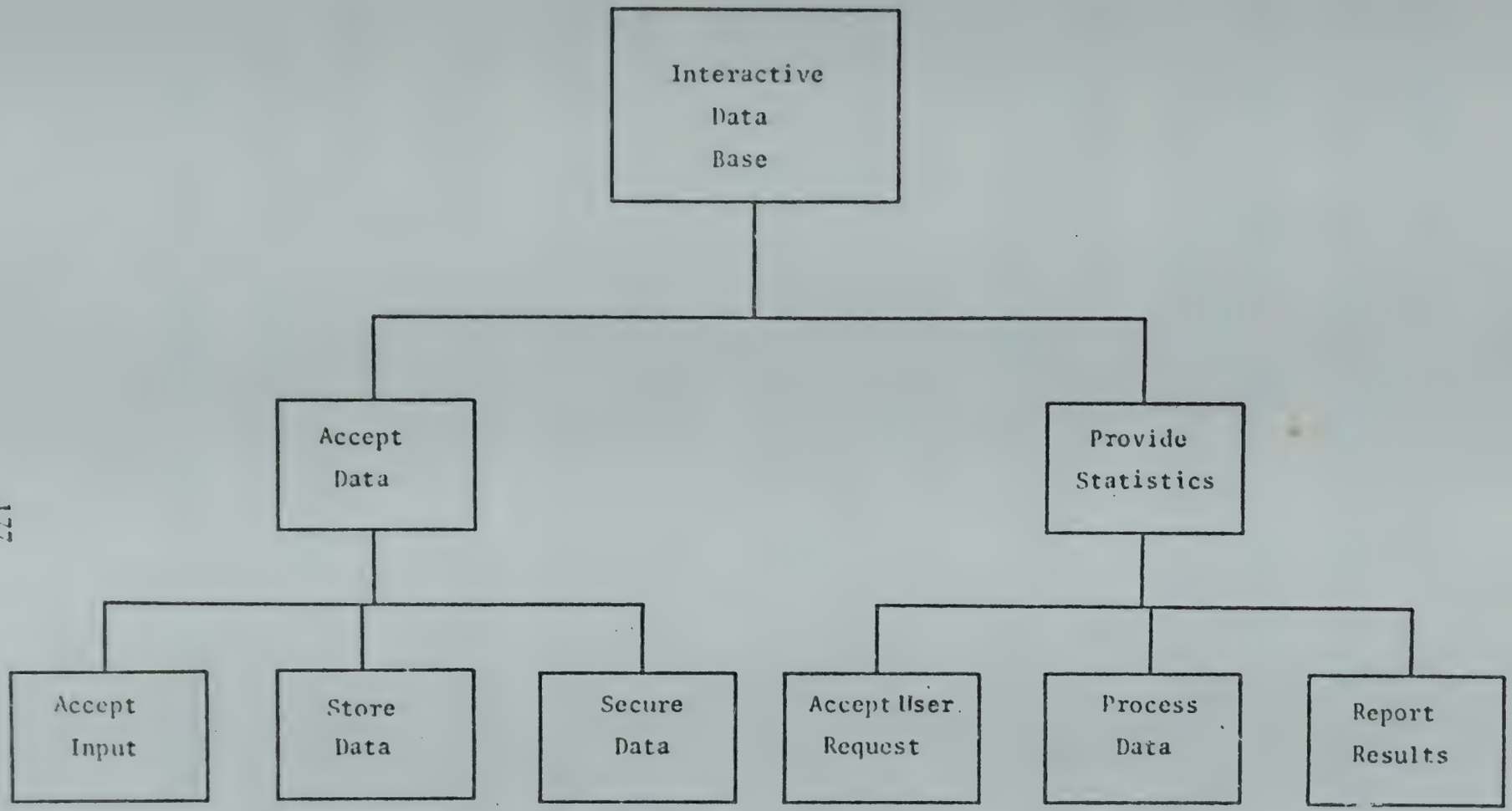

Fig. 4. Interactive Data Base.
Functional Hierarchy.

2. Design. The computer equipment available to the project consisted of an IBM System 370 complex at PCC. The available terminal in Salt Lake City was an IBM Communicating Magnetic Card Selectric Typewriter. Available data base management systems at PCC consisted of MARK IV and Model 204.

This latter software is a data base management system developed and marketed by Computer Corporation of America, Cambridge, MA. A data structure based on multiple indexes, as supported by Model 204, appeared to meet the nature of expected queries more effectively than one based on a hierarchical structure.

Standard programs were to be developed so that the user at the typewriter terminal would only have to specify the parameters of his question in order to get an answer. The interpretation of the parameters and subsequent data base processing would be accomplished automatically according to the particular kind of query.

During the system design, two additional features were included. First, a capability to validate (detect errors in) the data was provided. The validation function would be available upon user request. Error detection was to be in terms of valid values for the various data elements. A capability to edit (correct) the data was also to be provided. Second, the system was designed to respond to requests to extract selected data and record it on disc or tape for subsequent use by other programs. Fig. 5 illustrates the interactive data base system flow chart.

The system, making use of the facilities of Model 204, possesses the advantages and limitations of that software. Non-programmers can easily make non-standard queries with some training. Efficient queries, however, can only be made on those data items which have been preselected. Also, system response depends on the efficiency of the algorithm and the number of users on the system.

3. Implementation. A manual log was set up to track the data from the time it is received. The log also serves as a repository of validation criteria and of problems.

Adding data to the data base is a complex task. A data structure is chosen and then the data are loaded into the data base. Loading has been performed by PCC, this ability not yet being available at Salt Lake City. The first system release contained about 14,000 illness case records from California and approximately 100 Tennessee cases.

Validation directly by Model 204 has not been implemented. The validation function is now performed indirectly by the user as a by-product of his analysis.

Fig. 5. Interactive Data Base.
System Flow Chart.

Model 204 provides fine support for editing. An example is as follows: The biostatistician discovers that there are two impossible outliers in a frequency distribution. A Model 204 request is made to print the records containing these outliers. The records are inspected and decisions are made as to what values should be substituted. The case numbers are used to again retrieve the records and to change the values.

Five standard user requests for statistics information were developed:

(1) Requests the number of cases in a user-defined set. For example:

```
STATE=CA AND YEAR=1972
```

provides a count of the number of illness cases which occurred in California in 1972 (and were later reported).

(2) Requests the complete case data for a user-defined set.

(3) Requests a selected data item.

(4) Requests the maximum and minimum values of a data item. For each extremum, it performs a binary search for that value which is at the end of the distribution.

(5) Requests a frequency distribution of a data item for a user-defined set of cases. The user must supply the starting and ending points of the distribution. For this, he may use the previous request to find the extrema. He may also choose whether to have empty cells printed.

Following initial use with the typewriter terminal, installation of a DATA 100 remote job entry terminal made possible the development of additional capability to access the Model 204 data base. The terminal contains a card reader, magnetic tape drive, CRT, and line printer. For those circumstances where direct interaction between the user and data is not required, use of batch mode releases the typewriter terminal for other applications. A set of control cards was prepared. Request cards may be keypunched in the same format as if the requests were entered at the typewriter, and added to the control card deck. The card deck can then be entered into the card reader and the response received on the line printer.

In order to extract data for analysis by statistical package, two requests were prepared. One writes data on a disc and the other, on a tape.

Evaluation of the interactive data base system can be found in a later section of this report.

Tape Data Base

1. Requirements. The tape data base system has been designed and is being developed as a result of experience with the interactive system. The system goal of the tape data base is the production of selected sets of stored validated data to be used as input to statistical analysis programs such as SPSS[8]. A biostatistician is the principal system user.

Requirements include the ability to add data to the data base to identify and correct errors, to report the content of the data base, to retrieve selected data sets, and to protect against data loss or compromise.

All data records for a particular source agency must be in the same format. Format changes are to be handled by separate processing. Figure 6 presents an overview of the system while Figure 7 shows the hierarchy of principal required functions to be performed.

Administrative requirements on the system include ease of use, one man-day maximum effort for addition of new data, one man-hour maximum effort for data retrieval, and early system delivery.

2. Design. The Data 100/PCC system consists of five IBM Job Control language procedures as illustrated in Fig. 8. The first performs data input and editing, as well as index updating and reporting. This shall be referred to as the "data preparation" procedure. The second copies a file from PCC to the remote terminal. The third and fourth serve as interfaces to the Statistical Package for the Social Sciences (SPSS),[8] and Biomedical Computer Programs (BMD)[9, 10] respectively. The fifth restores files whose integrity has been comprised.

The initial detailed design effort was concerned with the data preparation procedure. The procedure is composed of five sets of one or more programs, Figure 9.

The first task is to read an instruction provided by the user. This instruction specifies which of the remaining tasks he wishes to perform. All tasks except for one are mutually exclusive. The one exception is a report of data base contents which may follow any other task. The other tasks produce printed output which require user decisions before continuing.

The mechanism employed is for the first task to set a completion code and then terminate. Later tasks execute conditionally on this code. The first task also checks to make certain that the instruction is valid at that time. For example, a nonexistent file cannot be released for analysis. Another example is that new data cannot be added until either the previous addition is released or is aborted.

The task of adding data is itself composed of five sets of one or more programs, Figure 10. The first transmits data from the remote terminal in Salt Lake City to PCC. It consists of a program supplied by DATA 100 Cor-

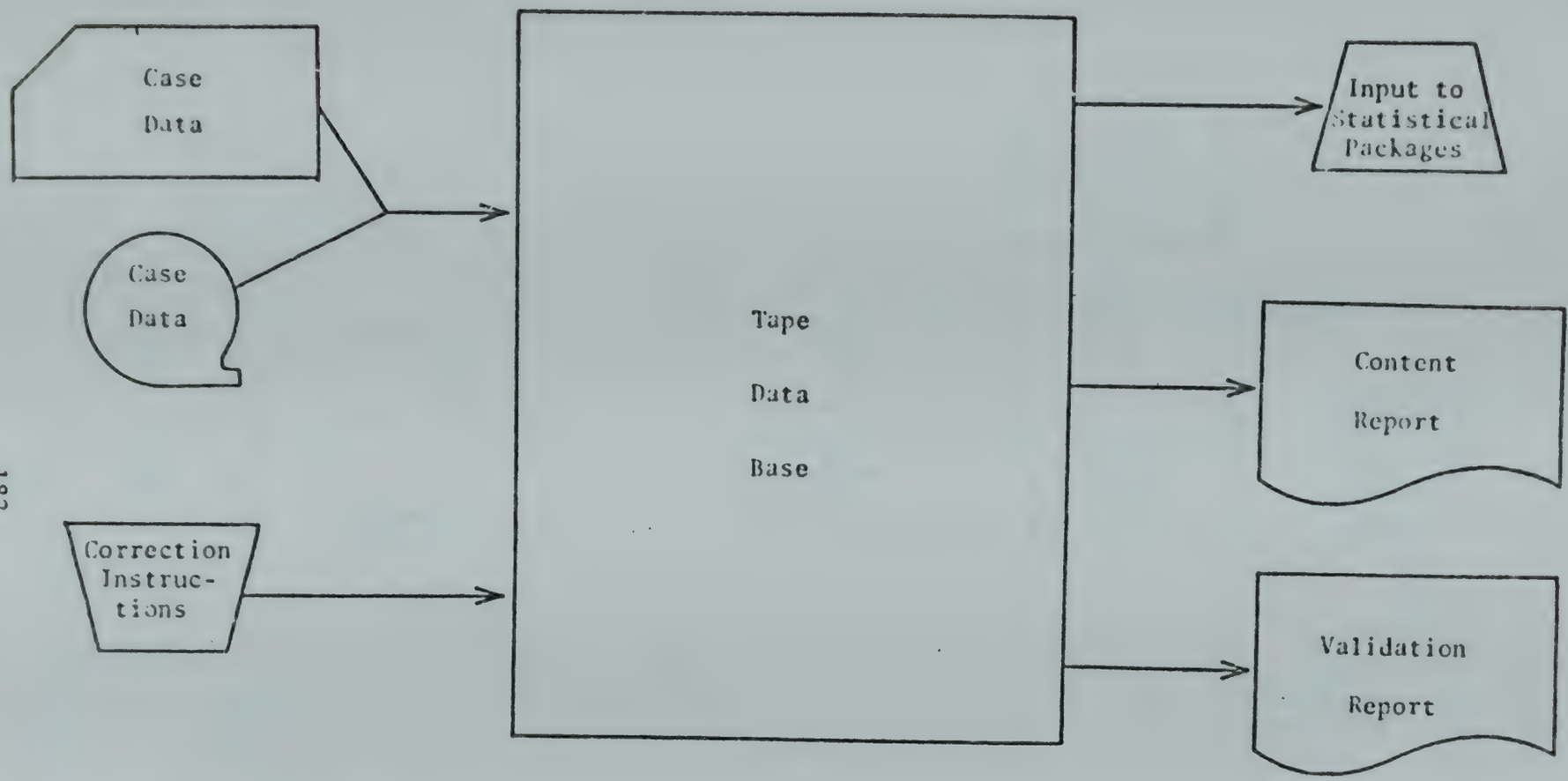

Fig. 6. Tape Data Base
System Overview.

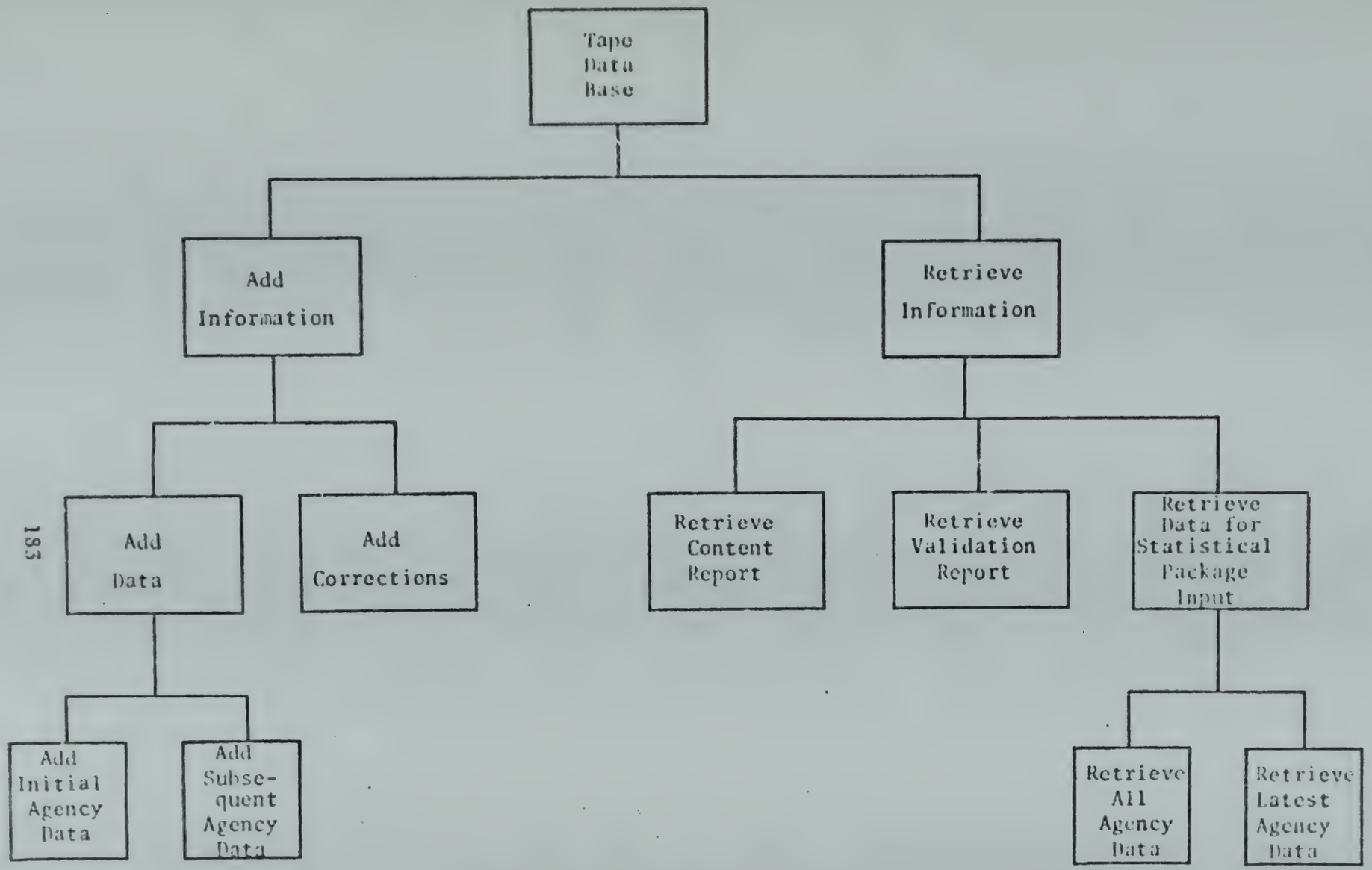

Fig. 7. Tape Data Base.
Functional Hierarchy.

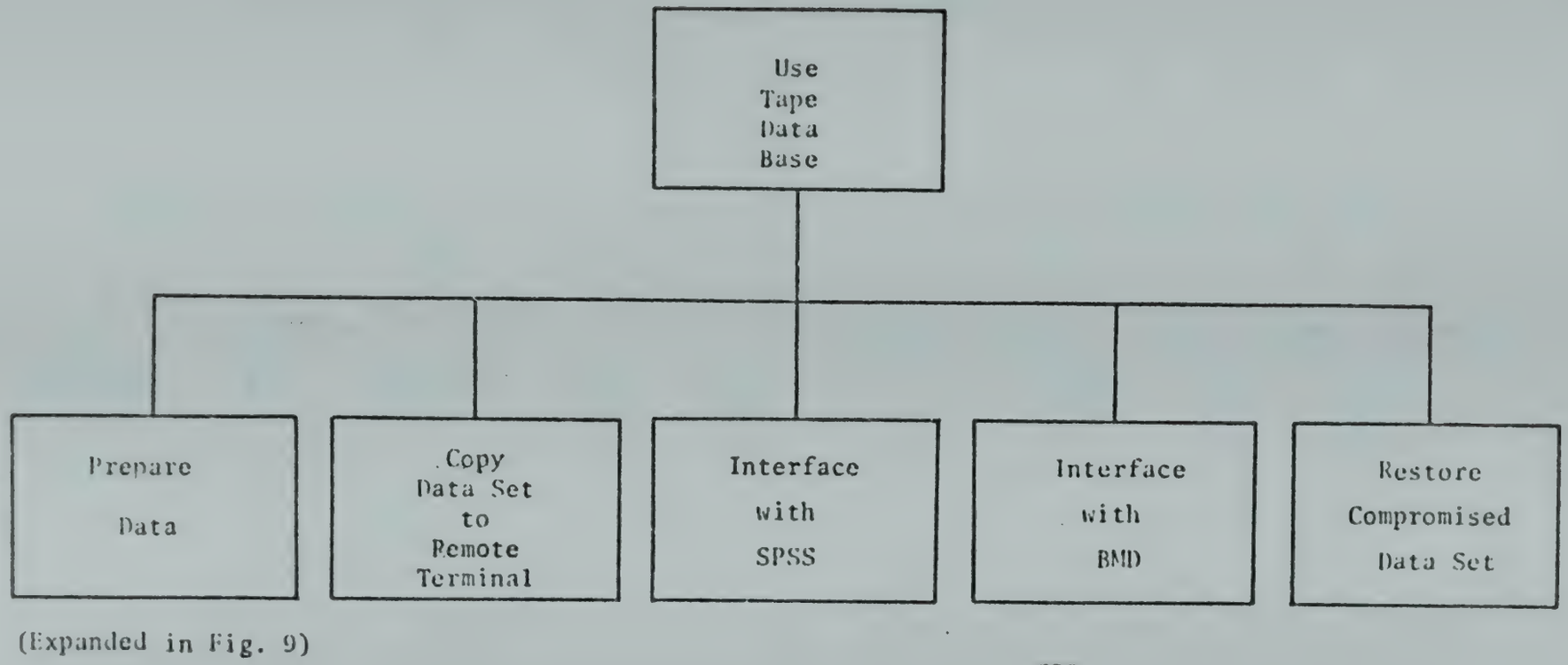

Fig. 8. Tape Data Base Structure.

Top level showing the five procedures comprising the data base software.

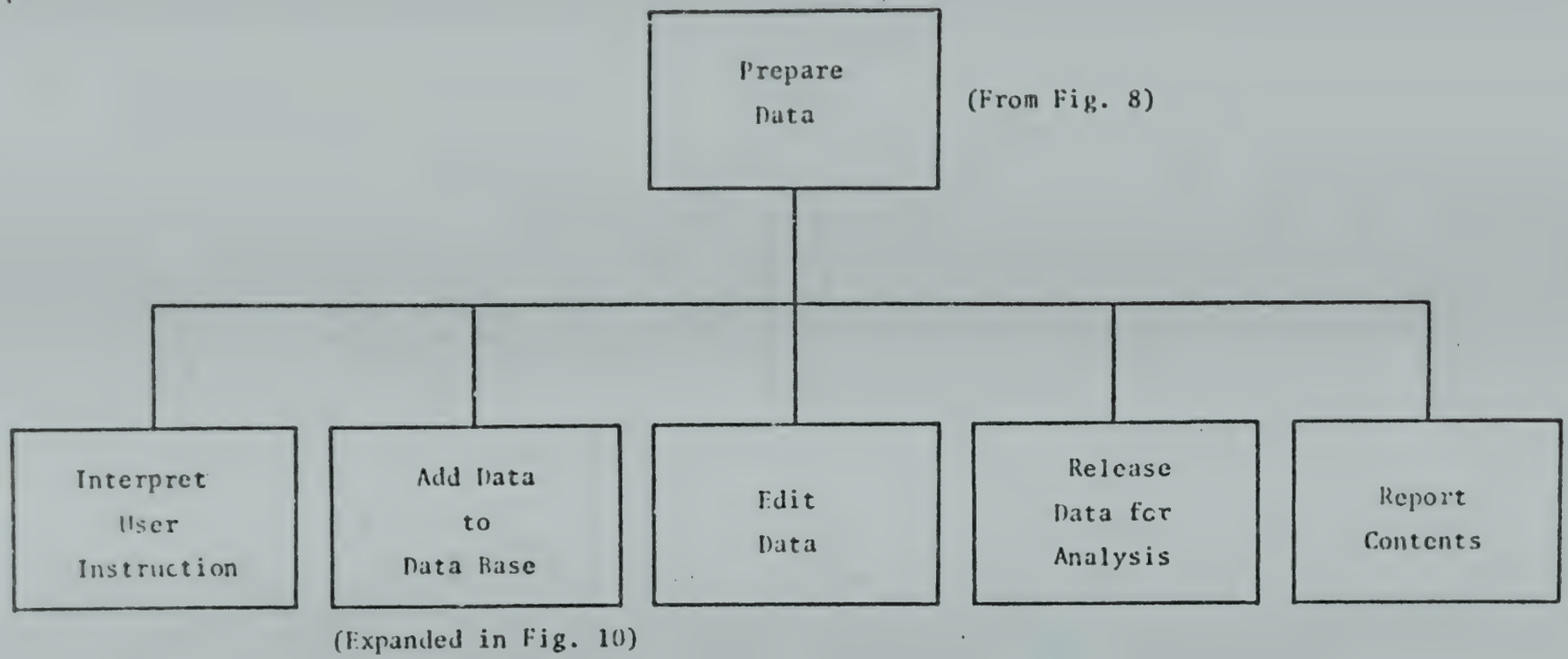

Fig. 9. Tape Data Base Structure.

Mid-level showing the five sets of programs comprising the data preparation procedure.

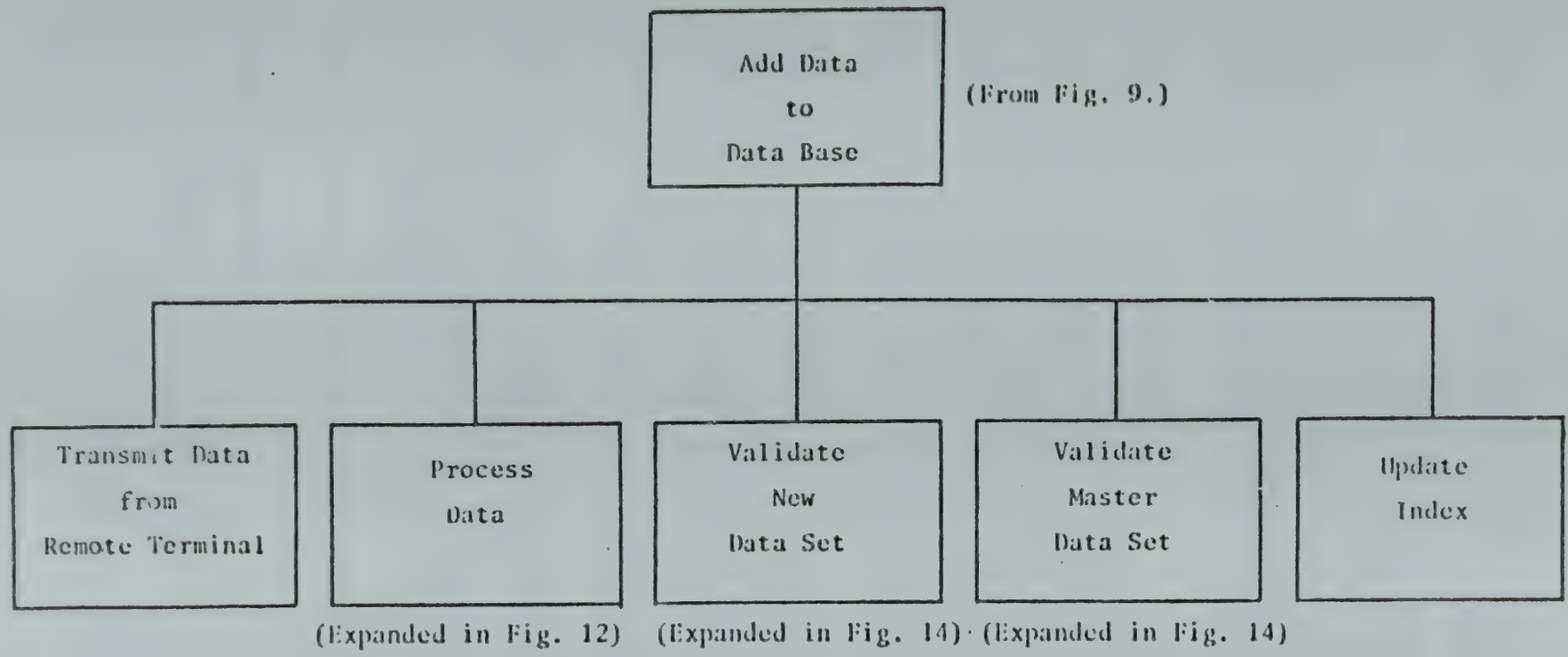

Fig. 10. Tape Data Base Structure.

Lower level showing the five sets of programs comprising the data addition task.

poration in support of the remote terminal equipment. The remaining program sets are selected for execution on the basis of condition codes.

Figure 11 shows the several kinds of tapes in the data base, and the flow between them. Not shown is the intertape processing. The apparent complexity results from the requirements to provide for addition of raw data from a new source, raw data from an existing source, for validating and editing new data and existing data, to provide protection against loss, and to allow transmission to and from PCC and Salt Lake City. Figure 12 presents some of the functions used in accomplishing the flow of data between the several kinds of tapes.

The validation task of data preparation is applied to new data or to existing data, Figure 10. Validation detects errors by comparing data element values with a set of specifications that define allowable values for each field in a record. Specifications are defined by the user. Revalidation of existing data may be required if specifications are altered. A flowchart for the validation process is shown in Figure 13, while Figure 14 presents the software hierarchy for validation. The validation report lists all found errors and is interpreted by the user prior to editing (error correction). The communicating file is a machine-readable list of errors that is used for subsequent automatic editing, subject to user instructions.

The next task of data preparation (Figure 9) is editing. Editing uses the machine-readable data set prepared by the validation program to locate the errors found by that program. It corrects all erroneous values by automatically substituting appropriate missing value codes. The automatic correction may be overridden by special instructions from the user.

The data base procedures, Figure 8, other than data preparation, are presently designed to be accomplished by JCL and utility programs.

3. System Implementation and Development Status. It is now possible to add data, interface with SPSS and BMD, restore compromised data, and maintain a log of system contents. The validation capability awaits test and release of the final version of the program. Error correction based on interpretation of the validation report will be accomplished initially via general purpose edit routines available at PCC.

Evaluation of the tape data base is found later in this report.

Statistics Analysis Capability

The tape data base includes the capability for creating selected sets of data for statistical analysis. All data for each source agency is maintained in a separate data set. In addition to providing all data from an agency, there is the capability to provide just the latest (most recently received) if such is desired.

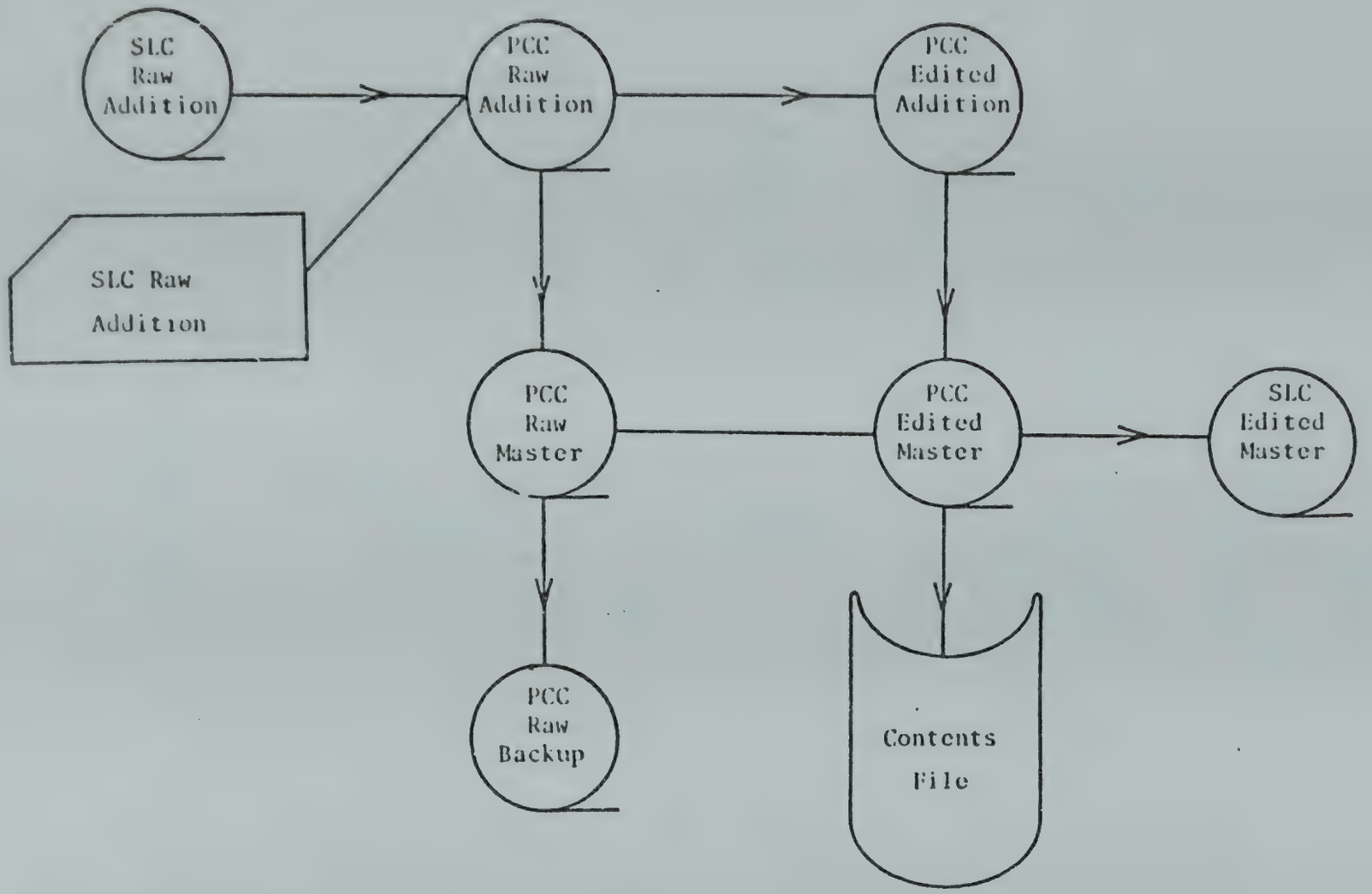

Fig. 11. Tape Data Base.
Data flow and tape content.

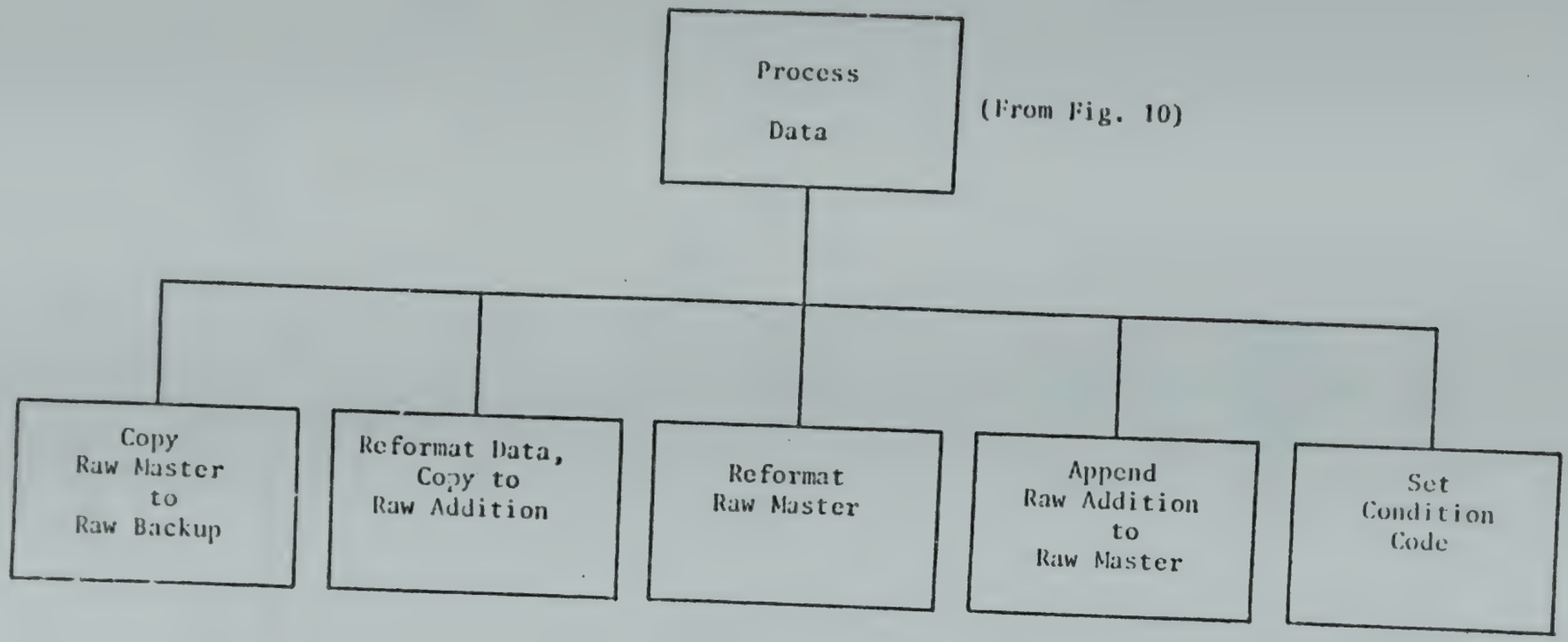

Fig. 12. Data Base Structure.

Detail level showing the programs comprising the general data processing task.

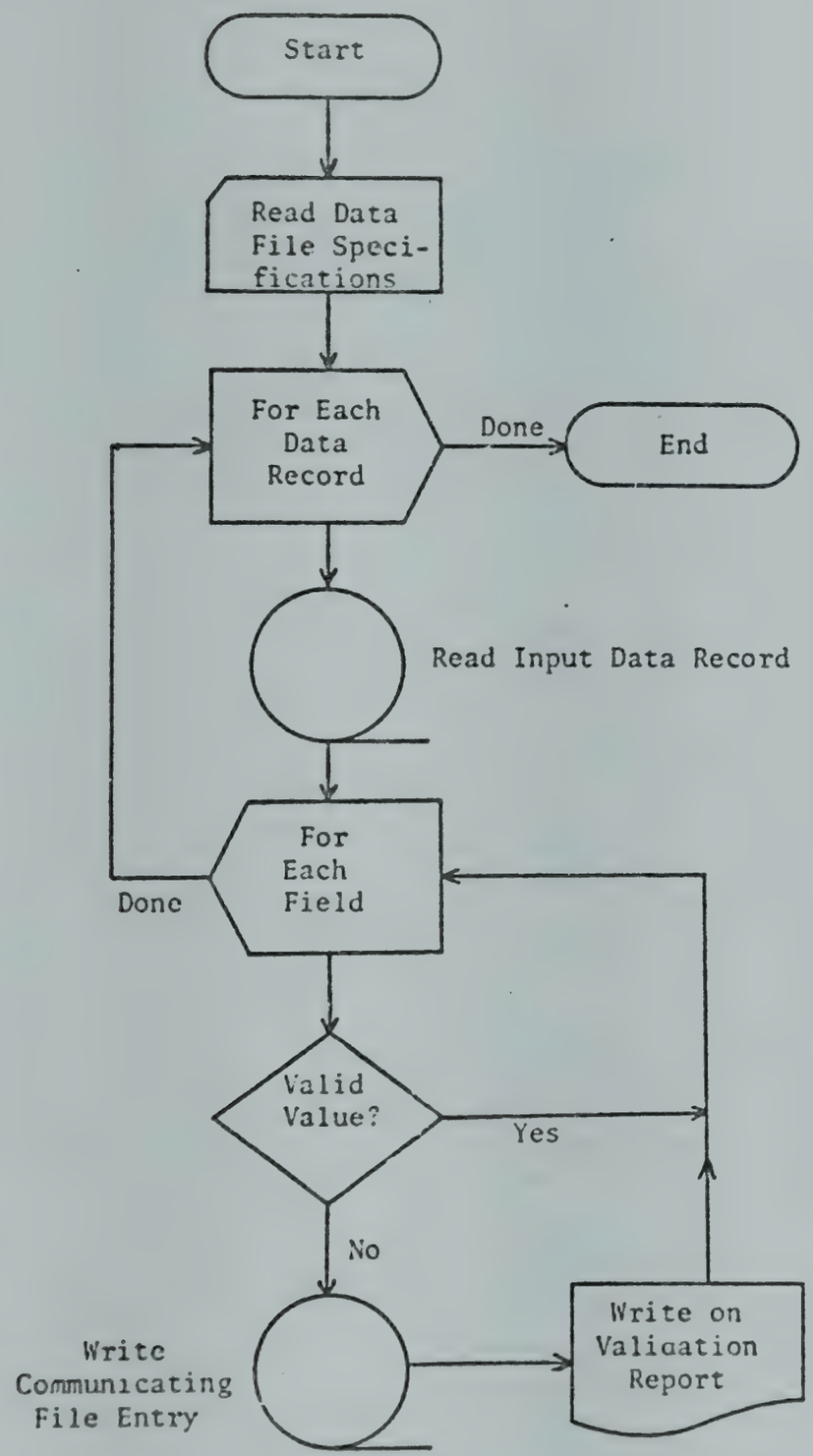

Fig. 13. Tape Data Base Validation Program Logic.

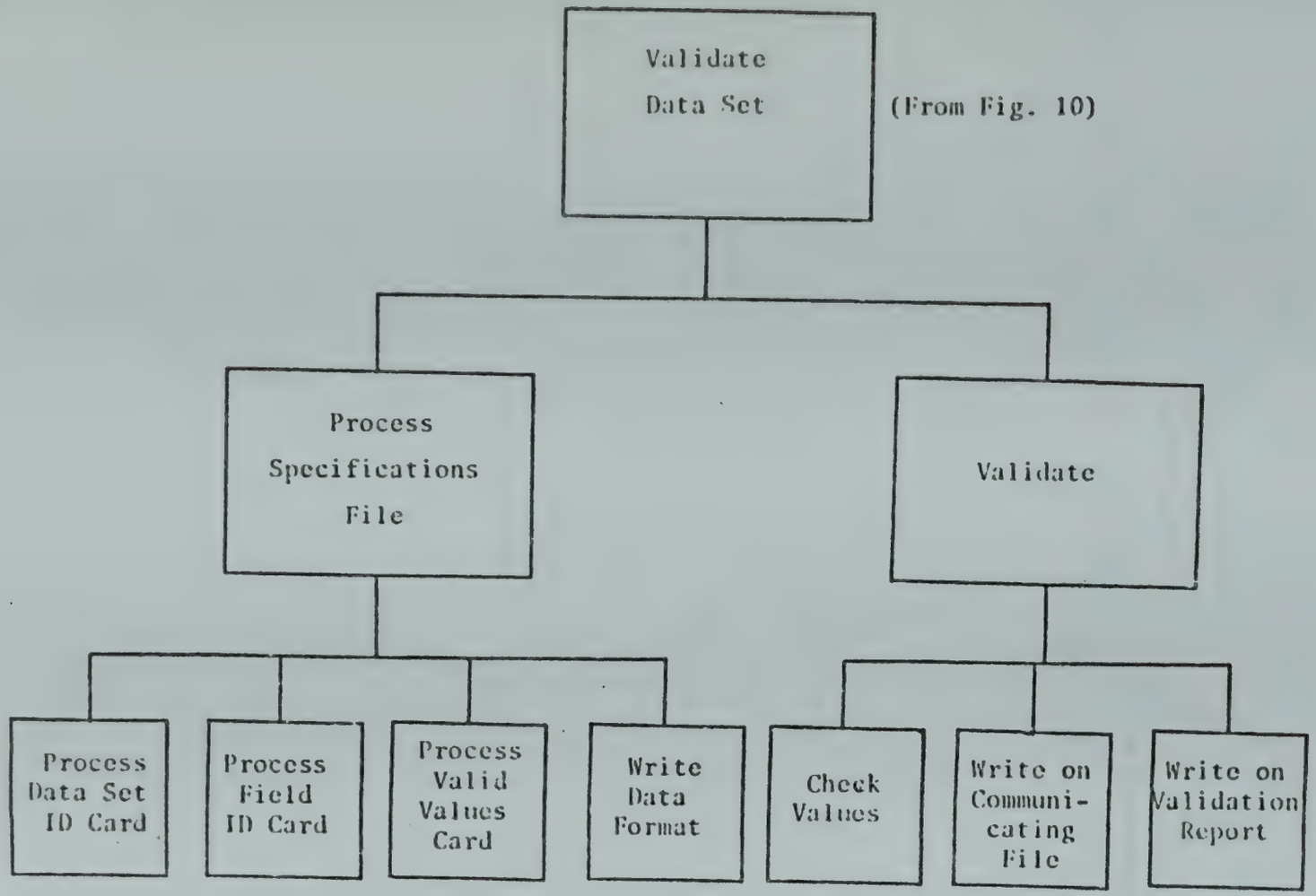

Fig. 14. Data Base Validation Program Structure.

The requested data set is a machine-readable output of the tape data base. It is used as input for the particular analysis program(s) of choice. For present purposes, analysis is conducted via standard program packages available at PCC. SPSS has the ability to create and maintain internal subfiles. The statistician uses this feature to further select data from that provided by the tape data base. For example, subfiles may be created to allow year-by-year analysis. The statistician then specifies the analysis wanted, i.e., frequency, cross tabulation, etc., and the parameters of interest. Computation based on the selected data set is performed and the results appear in the form of computer printouts. These printouts, usually tabular listings, are then interpreted and used to direct further inquiry or for project reporting.

SYSTEM EVALUATION

At present, the National Data Collection System may be considered to include:

1. WC agricultural case data collection activity,
2. interactive data base,
3. tape data base,
4. National Safety Council Farm Accident Survey punched card records, and
5. data analysis and reporting.

Two additional data sources, when and if developed, may also become part of the System. They are:

1. occupationally coded hospital discharge records, and
2. rural/migrant clinic records.

The following paragraphs are intended to provide evaluative comment on the several System elements.

WC Agricultural Data Collection Activity

Receipt of case records from cooperating agencies is essentially routine. Following initial contact to determine if such records existed, arrangements were made to obtain those dealing with agriculture. The arrangements included specifying the particular records to be selected, the format for magnetic tape recording if used, and agreement regarding payment for data processing. Cost for the records is minimal, currently totaling no more than a few hundred dollars annually, plus additional amounts if one-time special programming is needed.

Case records are selected on the basis of those Standard Industrial Classification[5] codes that apply to agriculture. To protect confidentiality, sensitive information, such as employer and employee names, is deleted.

Data is received annually or quarterly, either automatically or in response to periodic request. This procedure is not burdensome because of the small number of agencies involved. With suitable mailing lists and request scheduling, all potential agencies could be handled easily.

Each case record, whether in punched card or magnetic tape form, contains coded information on the particular injury or illness case. The completeness and detail varies from state to state, as does the numerical coding used to translate the case information to machine usable form.

There appears to be no reason why the method of collecting available agricultural case records could not be used in connection with other industries. Depending on the industry of interest, the quantity of data requested could be for larger than for agriculture. There are cases where the data processing capabilities of a state are such that computer selection of records for particular industries is not now available, even though the records include the needed coding.

The shortcomings of agricultural WC case records have been described in the report "An Analysis of Worker's Compensation Case Data in Agriculture."[11] Included are lack of detail in industry and occupation classification, absence of exposure information, and coding differences among the states. These factors would apply to other industries as well. For agriculture, accurate analysis that crosses state boundaries is made extremely difficult by coding differences. To some degree, this may also be true for industrial records. While the goal of national statistics based on WC data is thwarted, the objective of identifying morbidity problems where they occur is still viable.

For agriculture, available WC data give incomplete geographical coverage and are fraught with technical difficulties. It is, nevertheless, the only case data source available at present that can provide some routine surveillance, perhaps leading to more specific surveys and research. The data acquisition cost is minimal, there is a future potential for broader coverage, and the activity should be continued.

Interactive Data Base

Early in the Program, it was thought that the collection of WC case records would be used and analyzed by individuals with a variety of needs and skills. One user might want an answer to the question, "How many 1972 cases of pesticide poisoning were reported in Ventura County, California, for males over 50?" Another user might want a printed list of the frequency of occurrence of all illnesses reported in a particular area for a certain period of time. Assuming this kind of use and likelihood that answers to questions would prompt immediate new questions, it appeared that an interactive computer system using modern data base file management techniques would best provide the needed capability.

All California disease case records have been entered into the Model 204 data base described elsewhere in this report. By means of a typewriter computer terminal, a user may obtain answers to a variety of questions about the information in the data base.

Experience has shown that this interactive capability is used only sporadically for special purposes. As implemented for this project, the Model 204 approach does not have the capability to produce comprehensive cross tabulations and other statistical analyses. No further development of the interactive approach is planned. The existing Model 204 system,

including the California disease data, remains as a technique demonstration and the basis for future development if a need is defined.

Tape Data Base

The tape data base was developed when it became evident that the interactive analysis system was used rarely. For most applications, batch processing using standard statistical analysis programs is the method of choice. In this circumstance, the data need not be stored "on-line" using disc memory. To support the batch processing analysis of WC data, a tape data base has been developed. All WC case data, as they are received, are entered into this data base that physically consists of magnetic tapes, one or more for each cooperating agency source. At present, the tape data base contains approximately 125,000 records. The system for creating the tapes and validating the data records is described elsewhere in this report. Selected information may be drawn from the tape data base for statistical analysis by special collections of programs provided at the computer center.

The techniques and software developed for the tape data base are broad in capability, not being restricted by the content of the data records. Data from other sources and studies can be entered, stored, and used in the same manner as the WC data. The tape data base system is thus a valuable capability that can be applied to other situations, and it should continue to be developed.

National Safety Council Farm Accident Survey Punched Card Records

Punched card duplicate records of information collected in six states participating in the Farm Accident Survey (FAS) have been received. Because of the limited resources, no analysis of these records has as yet been performed.

It is planned to conduct a comparative study of statistics derived from California WC data and California FAS data. The objective of the study is to test the hypothesis that both sources of information give roughly comparable statistical results for data that is in common. If the hypothesis is shown to be true, then the particular source to be used for a given analysis can be chosen on the basis of other factors: timeliness, additional information, accessability. If not true, the nature of the discrepancies may suggest the need for additional surveys or for specific cautions in drawing conclusions from analysis results.

The entire set of FAS data is in a data base operated by the Council. Periodic summary statistics are published, and, in principle, special analysis can be conducted on behalf of Council members or others by special arrangement. The Council has taken the position that it cannot release duplicates of the case records to researchers, for the reason that the data was collected by cooperating agencies with the understanding that such release would not take place.

The Council, a private organization, is understandably concerned that nothing be done to damage the FAS. The survey depends on the voluntary cooperation of interviewers and farm families. That relationship may be fragile, and could be compromised if participants came to believe that federal regulatory action would result from Council activity. These considerations apparently led to the suggestion that FAS data be requested directly from participating states, thus perhaps insulating the Council itself.

Because the FAS will eventually cover the entire U. S., and because the data itself contains some exposure specifics missing from WC records, it seems necessary that safety programs in agriculture take into account the statistical output of FAS. As records become available directly from the states, data analysis could be accomplished if appropriate resources were available. Alternatively, negotiations need to be conducted with the Council to find ways of accomplishing more effective use of the important data in their possession.

Data Analysis and Reporting

Analysis activity in connection with the National Data Collection System is, at present, almost exclusively statistical in nature. Resources supporting this analysis include the tape data base, high-speed remote computer terminal equipment in Salt Lake City, the Parklawn Computer Center (PCC) in Rockville, Maryland, and analysis program packages such as Statistical Package for the Social Sciences (SPSS) and BMD Biomedical Computer Programs available at PCC. These resources are in themselves satisfactory and are essential to the job at hand.

The nature of analytical results obtained so far is best represented by this report. Evaluation of the analytical process reveals several problems. These problems, described below, are considered challenges for future action.

A goal of the National Data Collection System is the early identification of existing and emerging problems in agricultural health and safety. Factors in problem identification include adequate data on injury and illness occurrences, satisfactory demographic population-at-risk information suitable for rate calculation, comparative norms for these rates, and medical/epidemiological and other occupational health expertise to assist in guiding the analysis and interpreting the statistics. To the extent these factors are not adequately present, expectations about the System may be frustrated. Given the limitations of the available case data, the key missing factors are population statistics for rate calculation, and assigned medical/epidemiological or other occupational health skills.

Elsehwere in this report are some coarse statistics describing injury and illness rates. More meaningful rates would express occupation-specific ratios of case occurrences to population-at-risk. This degree

of detail does not exist in a direct sense. A source that directly lists the number of dairy farmers, grape pickers, lettuce harvesters, etc. has not yet been discovered. In the absence of specific counts of those in well-defined agricultural occupations, some indirect approach is needed for estimates of population at risk. Particularly in a state like California, there is a plethora of periodic reports that bear on various aspects of agriculture. These reports, prepared by state and U. S. departments of agriculture, health, industrial relations agencies, and others, often contain fragmentary information about the farm labor force. Relating these labor statistics from disparate sources to WC case data requires a level of effort not now available, and may not prove feasible.

Another difficulty in acquiring counts of those engaged in particular occupational categories can be that of confidentiality. For example, in California, there does not seem to be a breakdown of the occupational or industrial makeup of those eligible to participate in the WC system. (Generally speaking, all employees are eligible in that state.) There is, however, another insurance system that contains data that could lead to measures of the number of employees in various occupations. The California disability insurance system includes the same labor force as WC except for some minor differences not affecting agriculture. On a quarterly basis, each employer reports to the disability insurance agency the number of workers employed during each month in that quarter. The Standard Industrial Code classification is carried to the four-digit level (quite detailed), and a magnetic tape is prepared containing records from all employers in the state. Included in the records is county identification. By selecting those records with agricultural SIC codes, an important demographic resource would be available for statistical research purposes. The problem is that the data is collected under a guarantee of confidentiality similar to that of the U. S. Census. Even with identifying names removed, individual records cannot be released. Summary counts at the county level cannot be released when there are three or less employers in that area for a particular industry. The agency has some summary statistics for selected counties. Access to the entire data set could be valuable.

The use and evaluation of collected case data requires statistics and occupational health skills applied in a creative manner, particularly where the data itself is defective in some way. The advice of a hygienist, epidemiologist, occupational health specialist or similar expert is needed to select those areas where analytical effort would most effectively be directed. The decision to concentrate on a particular disease or hazard needs to be made. Under the present Program, only the biostatistical expertise is available. To effectively make the best use of the National Data Collection System, the Program sponsor should provide appropriate health specialists, via contract or Institute staff, to assist in effective use and evaluation of the injury and illness case data resources.

Computer analysis of the data base via SPSS and BMD results in voluminous printouts of cross tabulations and other statistical tables.

To create a manageable report, it is necessary to select and condense these tables. At present, this is a tedious manual task. Selection criteria and table preparation for reports can be automated. This capability should be developed.

The most useful form of reported results needs to be identified. To this end, recipients of analysis reports such as this one are being asked for their suggestions.

To satisfy the contract under which the Program is conducted, this annual report must be submitted on 1 March. If the requirement for the report were changed to a mid-year date, it would usually be possible to include all of the prior year's case data from California, Vermont, and perhaps New York in the analysis. If this completeness is deemed more useful than the other considerations that set the March date, it is suggested that 30 June be specified for the annual report.

Occupationally Coded Hospital Discharge Records

As a part of the research Program, a health study is to be conducted, examining the hospital experience of a rural agricultural population. The goals of the study are:

1. to compare injury and illness statistics of farm and non-farm employees; and
2. to test the use of occupationally coded hospital discharge records for providing such statistics.

The data collection system to be used for the study is the Professional Activity Study (PAS), operated by the Commission on Professional and Hospital Activities (CPHA), Ann Arbor, Michigan. Nearly 40% of all patient discharge records from short-term general hospitals in the United States are abstracted on PAS forms and statistically analyzed by CPHA. Tabular reports of the analysis are used by member hospitals for medical and administrative management purposes. The PAS form has blank data fields that can be used for entering information about patient occupation.

CPHA has agreed to participate in a study involving approximately six member hospitals in a carefully selected Minnesota area. In the hospitals, each patient will be asked to provide occupation and smoking information during his stay. This data will be coded onto the PAS form sent to CPHA. Magnetic tapes of selected data from this form will be provided quarterly for statistical analysis. About 20,000 records are to be included in the one-year study.

CPHA has made it clear that their cooperation with this study implies no commitment to a broader effort in the future. Occupation information routinely taken by hospitals is minimal at best, often missing entirely. There is an understandable concern about any addition to the already burdensome record keeping and reporting requirements imposed on hospitals by a myriad of agencies. It is also understandable that the research potential

of adding occupation data to 14 million patient record abstracts per year could be of great value to studies of all industries, not just agriculture.

The rural health study is to be completed 30 June 1977.

Rural Migrant Clinical Data

Various federal programs are aimed at providing improved health care delivery in rural settings. Special grants are being used to create, staff, and support this goal. The Public Health Service (PHS) is a dominant agency in the field. As required by PHS, reports of the activity of these clinics are largely administrative in nature, dealing with items such as number of patient encounters, source of funds, and clinician identification. Health problem surveillance could make important use of the experience of the clinics if meaningful occupation and diagnostic information was added to the reports in a standard, machine-compatible form. Additionally, standardized, easily coded physical examination and history forms would permit research utilization of information that is now collected but not routinely available.

Because of the nature of the clinic clientele in many areas, much of the data that could be made accessible is related to agriculture. It is recommended that development and test of standard machine-compatible forms for rural clinic use be accomplished. These forms, upon their adoption, could then be supplied by the PHS for use by sponsored clincis. Resulting data could be analyzed for occupational safety and health purposes. Unless an organized approach such as this is taken, potentially useful surveillance and research data will remain lost at the source level.

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